

Interventions for improving patients' trust in doctors and groups of doctors

Rolfe, Alix; Cash-Gibson, Lucinda; Car, Josip; Sheikh, Aziz; McKinstry, Brian

2014

Rolfe, A., Cash-Gibson, L., Car, J., Sheikh, A., & McKinstry, B. (2014). Interventions for improving patients' trust in doctors and groups of doctors. *Cochrane Database of Systematic Reviews*, 2014(3), CD004134.

<https://hdl.handle.net/10356/104143>

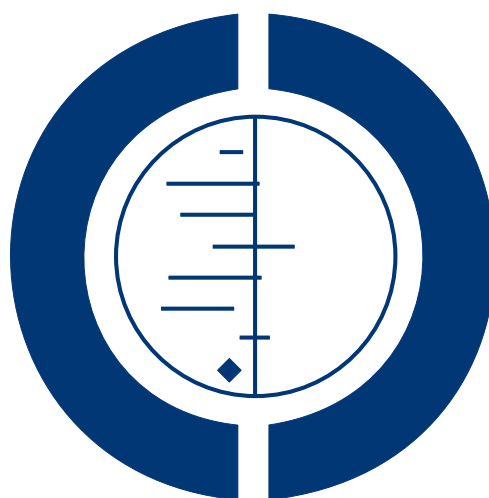
<https://doi.org/10.1002/14651858.CD004134.pub3>

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Interventions for improving patients' trust in doctors and groups of doctors (Review)

Rolfe A, Cash-Gibson L, Car J, Sheikh A, McKinstry B



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[Intervention Review]

Interventions for improving patients' trust in doctors and groups of doctors

Alix Rolfe¹, Lucinda Cash-Gibson², Josip Car³, Aziz Sheikh¹, Brian McKinstry¹

¹Centre for Population Health Sciences, The University of Edinburgh, Edinburgh, UK. ²Global eHealth Unit, Department of Primary Care and Public Health, School of Public Health, Imperial College London, London, UK. ³Lee Kong Chian School of Medicine, Imperial College & Nanyang Technological University, Singapore, Singapore

Contact address: Brian McKinstry, Centre for Population Health Sciences, The University of Edinburgh, Doorway 1, Medical School, Teviot Place, Edinburgh, Scotland, EH8 9AG, UK. Brian.McKinstry@ed.ac.uk.

Editorial group: Cochrane Consumers and Communication Group.

Publication status and date: New search for studies and content updated (no change to conclusions), published in Issue 3, 2014.

Review content assessed as up-to-date: 18 March 2013.

Citation: Rolfe A, Cash-Gibson L, Car J, Sheikh A, McKinstry B. Interventions for improving patients' trust in doctors and groups of doctors. *Cochrane Database of Systematic Reviews* 2014, Issue 3. Art. No.: CD004134. DOI: 10.1002/14651858.CD004134.pub3.

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ABSTRACT

Background

Trust is a fundamental component of the patient-doctor relationship and is associated with increased satisfaction, adherence to treatment, and continuity of care. Our 2006 review found little evidence that interventions improve patients' trust in their doctor; therefore an updated search was required to find out if there is further evidence of the effects of interventions that may improve trust in doctors or groups of doctors.

Objectives

To update our earlier review assessing the effects of interventions intended to improve patients' trust in doctors or a group of doctors.

Search methods

In 2003 we searched the Cochrane Central Register of Controlled Trials (CENTRAL, *The Cochrane Library*), MEDLINE, EMBASE, Health Star, PsycINFO, CINAHL, LILACS, African Trials Register, African Health Anthology, Dissertation Abstracts International and the bibliographies of studies selected for inclusion. We also contacted researchers active in the field. We updated and re-ran the searches on available original databases (Cochrane Central Register of Controlled Trials (CENTRAL, *The Cochrane Library* issue 2, 2013), MEDLINE (OvidSP), EMBASE (OvidSP), PsycINFO (OvidSP), CINAHL (Ebsco)) as well as Proquest Dissertations and Current Contents for the period 2003 to 18 March 2013.

Selection criteria

Randomised controlled trials (RCTs), quasi-randomised controlled trials, controlled before and after studies, and interrupted time series of interventions (informative, educational, behavioural, organisational) directed at doctors or patients (or carers) where trust was assessed as a primary or secondary outcome.

Data collection and analysis

Two review authors independently extracted data and assessed the risk of bias of included studies. Where mentioned, we extracted data on adverse effects. We synthesised data narratively.

Main results

We included 10 randomised controlled trials (including 7 new trials) involving 11,063 patients. These studies were all undertaken in North America, and all but two involved primary care. As expected, there was considerable heterogeneity between the studies. Interventions were of three main types; three employed additional physician training, four were education for patients and three provided additional information about doctors in terms of financial incentives or consulting style. Additionally, several different measures of trust were employed.

The studies gave conflicting results. Trials showing a small but statistically-significant increase in trust included: a trial of physician disclosure of financial incentives; a trial of providing choice of physician based on concordance between patient and physician beliefs about care; a trial of group visits for new inductees into a Health Maintenance Organisation; a trial of training oncologists in communication skills; and a trial of group visits for diabetic patients. However, trust was not affected in a subsequent larger trial of group visits for uninsured people with diabetes, nor with a decision aid for helping choose statins, another trial of disclosure of financial incentives or specifically training doctors to increase trust or cultural competence. There was no evidence of harm from any of the studies.

Authors' conclusions

Overall, there remains insufficient evidence to conclude that any intervention may increase or decrease trust in doctors. This may be due in part to the sensitivity of trust instruments, and a ceiling effect, as trust in doctors is generally high. It may be that current measures of trust are insufficiently sensitive. Further trials are required to explore the impact of doctors' specific training or the use of a patient-centred or decision-sharing approach on patients' trust, especially in the areas of healthcare provider choice, and induction into healthcare organisation. International trials would be of particular benefit. The review was constrained by the lack of consistency between trust measurements, timeframes and populations.

PLAIN LANGUAGE SUMMARY

Interventions for improving patients' trust in doctors and groups of doctors

Trust is a fundamental part of a patient-doctor relationship, and is associated with increased patient satisfaction, adherence to treatment, and continuity of care, although blind trust may on occasion facilitate poor care. We wished to know if there are effective ways of enhancing patient trust in doctors, by involving doctors (e.g. training) or patients (e.g. by providing information).

We searched a wide variety of databases on 18 March 2013 and identified 10 diverse studies, all randomised controlled clinical trials, with 11,063 participants, that met the review's inclusion criteria. Seven of the trials were new for this update. Overall, they did not provide sufficient evidence that a specific intervention affects trust. All were undertaken in the United States. Two were government funded, while seven were funded by charitable trusts and one by a Health Maintenance Organisation (HMO).

Interventions were of three main types; three employed additional physician training, four were education for patients and three provided additional information about doctors in terms of financial incentives or consulting style.

Two trialled physician training interventions to improve behaviours known to be associated with trust. The interventions showed no change in the patients' trust in their physician. The third trial showed that training oncologists in communication skills resulted in a small increase in trust.

Two trials examined group educational visits for uninsured diabetic patients. The first showed a small increase in trust, but the second showed no changes in trust. Another trial examined the effects of three types of educational introductory visits on new patients' trust in the doctors working for their health organisation. Trust in the doctors rose with one type of visit, in which patients were seen as a group. However, this was the least well taken up compared with individual visits with a physician, or a physician and health educator. A further trial explored helping patients decide about taking a statin by providing information and a chance to discuss options. This did not significantly increase trust.

Two trials explored disclosing to patients the incentives doctors are given for practising medicine in a cost-effective way via insurance plans. One trial led to no reduction and possibly an increase in trust. However, the plan information emphasised reducing unnecessary tests, rather than cost-cutting. The other trial showed no decrease in trust with disclosure. A final trial matched patients to doctors depending on their beliefs about care. Although some aspects of the doctor-patient relationship were improved, trust was not significantly affected. There was no evidence of harm from any of the studies.

The review was constrained by the lack of consistency between trust measurements, timeframes and populations. We have highlighted the types of further trials that are required to explore the impact of doctors' specific training or the use of a patient-centred or decision-sharing approach on patients' trust. Particularly, there is a need for international studies over longer follow-up periods in different healthcare systems.

BACKGROUND

The patient-doctor relationship has an important role in the delivery of medical care, providing a context in which caring and healing can occur. Trust is a fundamental component of this relationship (Emanuel 1995; Hall 2001; Mechanic 1996a; Thom 1997).

Description of the condition

What is trust?

The word 'trust' is commonly used interchangeably with terms such as 'confidence', 'have faith in' and 'believe in'. Trust is an important everyday concept defined as 'worthiness of being relied on; fidelity; a resting on the integrity, friendship of another' (Kirkpatrick 1983). Yet, in the scientific realm, different aspects or features of trust are emphasised. For the purposes of this review we will focus on its descriptions within medicine. Most of the literature divides trust in two categories: trust in the medical profession as a whole (or the healthcare system as a whole) and trust in a particular medical practitioner. While we take into consideration that social and personal trust are related, we focus on interventions to improve trust in individual doctors or related groups of doctors (for example within a Health Maintenance Organisation).

Various definitions and conceptualisations of trust have been developed within medicine (Dibben 2000; Hall 2001; Hupcey 2001; Mechanic 1996b). Mechanic and Schlesinger define trust as "the expectations of the public that those who serve them will perform their responsibilities in a technically proficient way (competence), that they will assume responsibility and not inappropriately defer to others (control), and that they will make their patients' welfare their highest priority (agency)" (Mechanic 1996b). Dibben, interestingly, defines trust as the process by which barriers to co-operation and compliance are overcome (Dibben 2000). Hall sees trust as inseparable from vulnerability, and that trust has a subjective component that requires an optimistic acceptance of vulnerability (Hall 2001). This relies on a central feature of all definitions of trust, namely the belief on the part of the patient that their doctor will put their interests first - another example of agency (Barefoot

1998; Hillman 1998; Newcomer 1997), together with caring and respect (Lupton 1996).

Trust is seen as a global attribute of treatment relationships, one that encompasses subsidiary features such as satisfaction, communication, competency, and privacy, each of which is important in its own right (Hall 2001). Satisfaction differs from trust in that it is essentially retrospective, whereas trust reflects an expectation of the quality of an ongoing relationship (Balkrishnan 2003). In relation to trust, the moral integrity and personal quality of the doctor are named as crucial (Crawshaw 1995) and must also include professional knowledge and skills (Emanuel 1995). While trust may be seen to have several attributes, for example, fidelity, competence, honesty and confidentiality, researchers have been unable to track these individual components. Trust in doctors is thus seen as a uni-dimensional construct (Hall 2001).

For the purposes of this review, we employed a broad definition of patient trust, i.e.: 'The belief that a doctor is working in the patient's best interests'.

Patients' views

According to patients, trust is built largely on a doctor's interpersonal competence (Mechanic 2000; Thom 1997). Doctors' behaviours that are associated with trust include: thoroughly evaluating problems, understanding a patient's individual experience, compassion, empathy, advocacy, reliability and dependability, communicating clearly and completely, continuity of care, building a partnership, giving time in the consultation, providing appropriate and effective treatment, and being honest and respectful to the patient (Keating 2004; Lupton 1996; Mechanic 2000; Pearson 2000; Tarrant 2008; Thom 1997; Thom 2001). Additionally there is some evidence of an association between the practice of patient-centred care and good communication and increased trust among patients (Fiskella 2004). The notion of the 'good doctor' rests very strongly on notions of trust, of feeling able to share one's intimate feelings, allowing another person to touch one's body and of following his/her advice (Lupton 1996). Interestingly, patients view trust as an iterative process, and commonly test their doctors against knowledge and expectations (Mechanic 2000). Most importantly, patients refer to learnable skills and not simply to personality characteristics (Mechanic 2000). Patients' trust in institutions (e.g. health insurers or health services) is some-

what lower than trust in individual doctors (LaVeist 2000). There is a strong correlation between patients' individual trust in a physician and the physician's institution, but it is not clear which influences which the most (Kao 1998b). Patient trust in the physician may be influenced by the policy of the insurer or health plan. For example, trust appears to be higher among patients who have been given more choice in their doctor (Hall 2002). Patient characteristics associated with trust include race (white patients state they have more trust in their doctor than non-white patients do) and religion (religious people are more trusting than non-religious people) (Benjamins 2006; Nguyen 2009)

Interest in trust

Trust has become a prominent healthcare issue in the last decade, not only among patients and doctors, but also among authorities, policy-makers and the public in general. Various studies have found (Doescher 2000; Grumbach 1999; Kao 1998a; Safran 2001), and many authors have advocated that much more should be done to preserve trust (Cusack 2000; Fugelli 2001; Gray 1997; Heer 1997; Hillman 1998). Although the majority of patients still trust doctors to act in their best interests, there is growing concern that trust is declining (Emanuel 1995; Mechanic 1996b; Pearson 2000). In the main, this is attributed to changes in healthcare systems which in various ways affect the patient-doctor relationship (Mechanic 1996a; Shortell 1998), for example: by preventing patients from developing a personal ongoing relationship with the doctor; by shortening consultation times; and by providing potentially conflicting incentives to doctors, such as dual responsibilities to patients and to third-party purchasers of health care. Increased autonomy among patients and access to potentially conflicting information from the Internet may also contribute to an erosion of trust. Such factors may work within wider societal changes, which aim to redefine trust in all professions (O'Neill 2002).

Description of the intervention

Functions of trust

Even well-informed and knowledgeable patients have to rely on their doctors to work in their best interest, which includes providing the best care possible, educating, and keeping personal information confidential. Trust may enable the patient to accept the doctor's recommendation for self-monitoring and may reduce worries as to whether everything needed has been done. If clinicians feel trusted, it may be less likely that they will practice defensive medicine, for example ordering investigations to prevent litigation when these are more likely to confuse than clarify the picture, with minimal chance of a missed diagnosis. Patients' trust in their doctors may be important in the management of both

chronic illness (for example trust is associated with promoting adherence to exercise or drug regimens in the control of hypertension) and acute illness (for example in overcoming suspicion when opiates are prescribed for pain control) (Hall 2001). Furthermore, some 40% of all new problems presented to general practitioners are non-specific and never evolve into a defined diagnosis (Kroenke 1989). Such problems can often be dealt with by reassuring the patient that a serious outcome is unlikely and negotiating return if the problem does not resolve within a few days or weeks (Rosser 2001). Such 'wait and see' policies, where appropriate, both reduce unnecessary medicalisation of non-specific problems, and save the costs of tests. On the other hand, 'blind' trust may deter the patient from, for example, asking questions when this is necessary and important. Trust implies a prediction about the future and thus requires some balance between risk and protective behaviour (Mechanic 2000). To estimate the risk of trusting the doctor or to behave protectively, for example by asking more questions or by seeking a second opinion, is often, however, very difficult if not impossible for patients. Yet seeking a second opinion can be seen as acknowledging that doctors also have limits, which they honestly admit, rather than that they are not trusted (Car 2005). When studying trust, we cannot avoid the issue of trustworthiness. It is important that doctors keep themselves worthy of trust, for example by avoiding conflicts of interest between their personal gain and the welfare of the patient. The assumption that doctors are trustworthy may unfortunately not always be correct. On these occasions, a lack of trust is an advantage and may help the patient avoid detrimental or even tragic outcomes. Therefore, interventions to improve trust must not decrease clinical standards.

Trust as an outcome

Trust grows in the context of an ongoing relationship (Kao 1998a). Trust is considered to be an important outcome reinforcing the patient-doctor partnership (Pearson 2000); but trust is associated with several other potential benefits, including increased satisfaction, adherence to treatment, and continuity of care (Baloush-Kleinman 2011; Lee 2009; Safran 2001; Thom 2001). In contrast, problematic experiences are strongly related to reduced trust (Keating 2002). With untrustworthy doctors, care may be appropriately refused by patients (Dibben 2000). When trust is breached, it is the patient who suffers (for example, by undergoing unnecessary procedures).

How the intervention might work

Interventions which may influence trust

It is conceivable that a variety of parameters associated with increased trust might be applied as interventions to improve patients' trust in their doctors. For example:

- Interventions to improve communication skills (e.g. encouraging a patient-centred approach or the expression of empathy);
- Interventions which demonstrate the doctors' openness and honesty (e.g. disclosure of financial incentives to limit costly investigations or treatment, or other incentives (research publications, published league tables) which might influence care);
- Interventions to emphasise confidentiality (e.g. regularly emphasising the confidential nature of the doctor-patient relationship through leaflets or by word of mouth);
- Interventions which may demonstrate doctors' technical competence (e.g. by advertising doctors' qualifications or compliance with continuing professional development);
- Interventions which may enhance the professionalism of the doctor (e.g. by the way the doctor dresses);
- Interventions to improve continuity of care;
- Interventions to improve access to care (patients may have more trust in a doctor who appears to make him or herself available to them);
- Interventions to encourage doctors to demonstrate caring by providing measures which might be seen as additional to normal care, for example educational interventions; and
- Interventions to enable patients' choice of doctor.

Measures of trust

Recent research has demonstrated that trust is a coherent psychological construct that can be reliably measured; it is possible to distinguish between trust and satisfaction, which is said to be the most similar 'construct' (Hall 2001). Different measurement instruments have been developed to evaluate patient trust (Anderson 1990; Eveleigh 2012; Grumbach 1999; Kao 1998a; Kao 1998b; Safran 2001; Thom 1999). The scales cover different dimensions of trust, and these multiple dimensions are emphasised. Some scales relate trust to predictors or consequences of trust, but all scales are broadly consistent with the theoretical concept of patient trust (Hall 2001). Important, especially for the purposes of this review, is the finding by Hall (Hall 2001) and others (Kao 1998b; Thom 1999; Zheng 2002) that patient trust is built holistically and that trust behaves as if it had only one dimension, although it is a construct with several dimensions (for example, fidelity, honesty, competence, confidentiality). No matter which dimensions of trust are covered in the scale, these items strongly correlate with the overall degree of trust. Hall and colleagues suggest that although trust contains several dimensions, each of which influences it, people do not, in fact, distinguish between them (Hall 2001). Recent research suggests that while trust in individual doctors, in the medical profession as a whole and in insurance plans is partly influenced by the same factors (the amount of contact, adequacy of choice in selecting physician or insurer), trust in individual doctors is also related to the frequency with which patients seek

care and their preference for control in medical decision making (Balkrishnan 2003). In contrast, trust in insurance plans is much more closely related to satisfaction.

However patient trust is defined, it is increasingly a focus of study. In part, this is because the preservation, enhancement, and justification of trust are fundamental goals of medical ethics, but more because it is now challenged rather than taken for granted.

Why it is important to do this review

This review updates our earlier review of the effects of interventions aimed at improving patient trust both in individual doctors and groups of doctors. Although such interventions overlap with interventions that promote improved communication skills and patient-centred care, this review focuses exclusively on studies measuring change in patient trust as an outcome.

OBJECTIVES

To assess the effects of interventions that aim to improve patients' trust in doctors and/or in groups of doctors.

METHODS

Criteria for considering studies for this review

Types of studies

Randomised controlled trials (RCTs), quasi-randomised controlled trials (quasi-RCTs), controlled before and after studies (CBAs) (with at least two intervention and two control sites, comparable timing of the periods for study for the control and intervention groups, and comparability of those groups on key characteristics), and interrupted time series (ITS) (with a specified, defined point in time at which the intervention occurred, and at least three time points before and three after the intervention). The methodological criteria for including CBA and ITS studies have been tightened in this version of the review (see [Differences between protocol and review](#) and [McKinstry 2006](#)).

Types of participants

Doctors; adult or child healthcare consumers/patients and people who are related to them (parents of children, relatives or unpaid/family or paid carers).

Types of interventions

We sought any intervention (for example informative, educational, behavioural, organisational) directed at doctors or patients (or carers) that was intended to influence patients' trust in their doctors; or any other intervention where trust was assessed as an outcome of the intervention. We differentiated between interventions aimed at healthcare professionals and interventions aimed at patients/carers.

Studies were included if the description of the intervention that was applied was adequately described (i.e. described in sufficient detail to enable the reader to understand the key steps undertaken) and used a validated measure of trust as one of its outcomes. When necessary, we sought additional information describing the intervention from study authors to help determine eligibility.

Types of outcome measures

A number of processes and outcomes may be affected by interventions that aim to influence the trust. We sought the following types of outcomes:

1. An increase or decrease in patient trust and the components of trust;
2. Other healthcare behaviours, including patients' adoption of lifestyle behaviours, and patients' use of interventions and services;
3. Health status and well-being, including: physiological measures (for example, blood pressure); clinical assessments (for example, wound healing); patient self-reports of symptom resolution or quality of life; patient self-esteem;
4. Use of resources: tests, referrals, hospital admissions, prescriptions, and other treatment interventions;
5. Patient and/or carer's satisfaction with care;
6. Patient and/or carer's perception of doctors' communication skills;
7. Patient and/or carer's perception of doctors' humanistic attributes;
8. Doctors' perceptions regarding patients' trust;
9. Patients' perceptions regarding doctors' trustworthiness.
10. Adverse outcomes for doctors, patients and/or carers.

We recorded data related to the medical context of patients (for example, setting within primary care) to assess the change in trust within that context. We paid particular attention to outcomes that may have indicated a breach of trust, or interventions which might possibly erode trust (for example, the revelation to patients of incentive payments made to physicians). In each case, the definition of trust used in the validated instrument was recorded and checked against the broad definition given above.

We excluded studies which did not measure change in trust (pre- and post-intervention) with a validated instrument.

Search methods for identification of studies

Electronic searches

We searched the following databases for the updated review:

- The Cochrane Central Register of Controlled Trials (CENTRAL, *The Cochrane Library*, issue 2, 2013)
- Ovid SP MEDLINE (2003 to 18 March 2013)
- Ovid SP EMBASE (2003 to 18 March 2013)
- Ovid SP PsycINFO (2003 to 18 March 2013)
- Ebsco CINAHL (2003 to 18 March 2013)
- Proquest Dissertations International (inception to 18 March 2013)
- Ovid SP Current Contents (Week 27 1993 to 18 March 2013)

For the original review (McKinstry 2006) we searched:

- The Cochrane Central Register of Controlled Trials (CENTRAL, *The Cochrane Library*, Issue 1, 2003)
- MEDLINE (1966 to week 4, 2003)
- EMBASE (1985 to July 2003)
- Health Star (1975 to July 2004)
- PsycINFO (1967 to July 2004)
- CINAHL (1982 to July 2003)
- LILACS (1982 to April 2003)
- African Trials Register (1948 to April 2003)
- African Health Anthology (1924 to April 2003)
- Dissertation Abstracts International (1861 to April 2003)

The search strategies for the original MEDLINE search and all of the updated searches are given in [Appendices](#). The searches for this review update were conducted on 30 July 2010 and 18 March 2013.

Searching other resources

We searched the bibliographies of studies assessed for inclusion. We contacted study authors, where possible, for information as to other potentially-relevant studies.

Data collection and analysis

Selection of studies

After searches were run and duplicates removed, two review authors independently assessed the potential relevance of all titles and abstracts identified from the electronic searches. We retrieved full text copies of all articles judged to be potentially relevant from the titles and abstracts. Five authors, working in pairs, then independently assessed those retrieved articles for inclusion to ensure that all titles underwent independent double assessment. Two authors met to check the final list of included and excluded studies, and any doubts or disagreements about particular studies were resolved by discussion. Following this, we undertook a manual follow-up of relevant references from publications cited in the review.

Data extraction and management

Where available, we extracted data relating to the following from all included studies:

1. Participants: patients (age of the patient (child, adult, elderly)), parents of the sick child, relatives, carers and doctors (age of the doctor (junior/senior)); cultural, religious background of participants;
2. The problem(s) with which the patient consulted (for example, severe/minor illness, acute/chronic);
3. Clinical setting or level of care (for example, primary, secondary, tertiary etc.), type of care (private or public), method of payment, medical speciality and country;
4. Study design and the key features of the study (for example, whether allocation to groups was at the level of individual healthcare provider or practice/clinic);
5. Intervention (full description; stated theoretical/conceptual basis; aims; training strategies used; how/by whom delivered; duration and timing; whether enhanced trust was seen as an end in itself or as an associated or related outcome). When we extracted information on the theoretical/conceptual basis for each intervention, we examined how the authors defined trust and whether the definition fitted within our broad definition. We explored which aspects of trust had been addressed (for example trust that the doctor is telling the truth, trust that the doctor will keep information about the patient confidential, or trust that the doctor works in the patient's best interests);
6. The number of healthcare providers or patients/consumers that were approached, trained and followed up; the number of patients/consumers at baseline and the number and proportion

followed up;

7. Outcomes assessed and timing of outcome assessment;
8. Results (effects), organised into seven areas: trust, doctor and/or patient consultation processes (i.e. patient and/or carer's perception of doctors' communication skills; patient and/or carer's perception of doctors' humanistic attribute), healthcare behaviours, health status and well-being, use of resources, patient satisfaction with care, patient's perceptions regarding doctor's trustworthiness;
9. Source of funding for the study;
10. Where stated, any conflict of interests the authors might have.

Two authors independently extracted full descriptions of each intervention meeting the inclusion criteria, onto a standard form.

Assessment of risk of bias in included studies

Two review authors independently assessed the risk of bias of each included study using the Cochrane Collaboration's 'Risk of bias' tool (Higgins 2011, chapter 8). For each domain, the review authors indicated whether it was 'low risk', 'high risk' or 'unclear risk' and extracted supporting information from the study. Any discrepancies were resolved by discussion with co-authors. The results of the assessment are presented in the section [Risk of bias in included studies](#) and the table [Characteristics of included studies](#) as well as [Figure 1](#) and [Figure 2](#). Studies that were so compromised by flaws in their design or execution as to be unlikely to provide reliable data were excluded. The reasons for exclusions are listed in the table [Characteristics of excluded studies](#).

Figure 1. Study flow diagram.

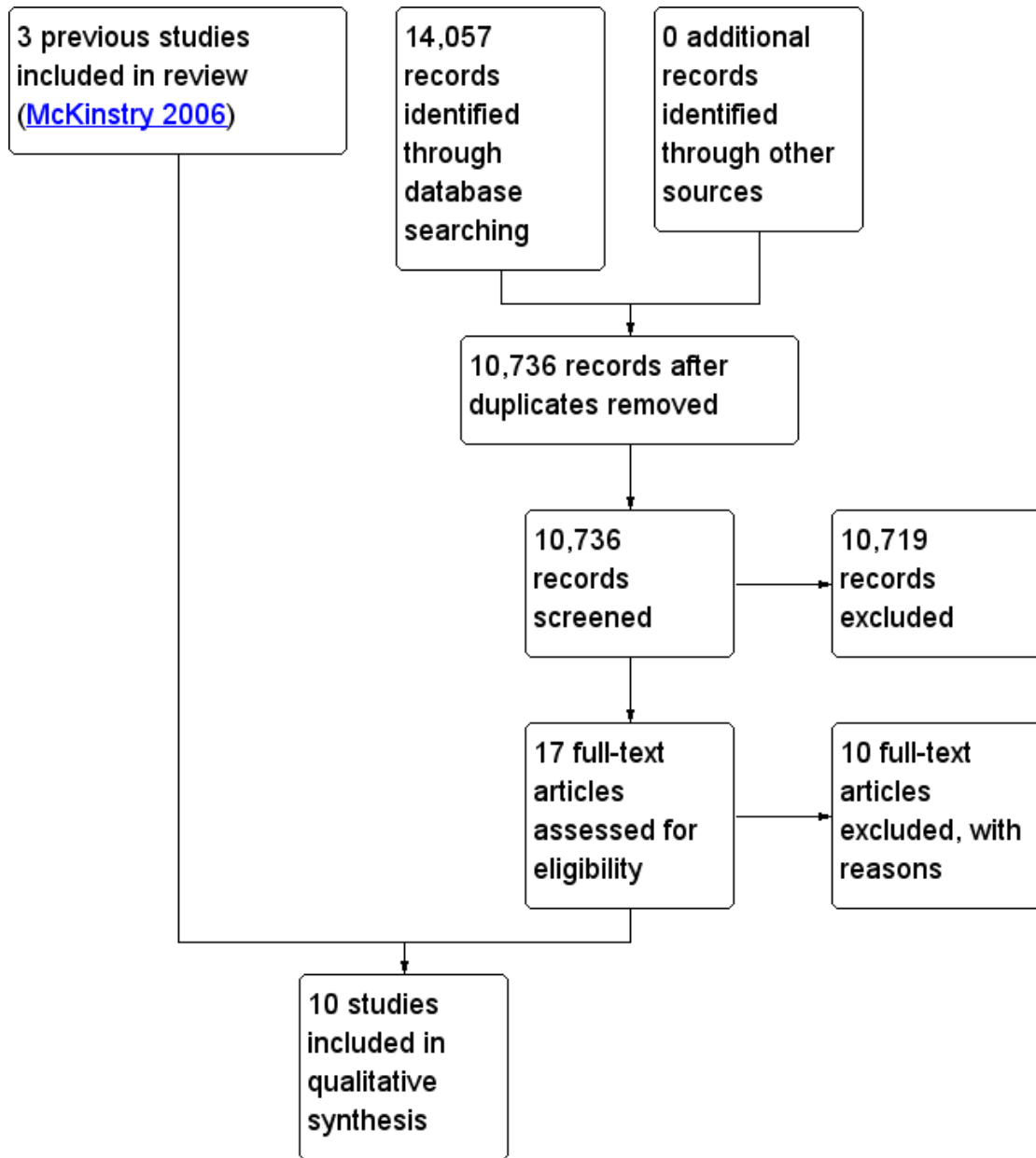
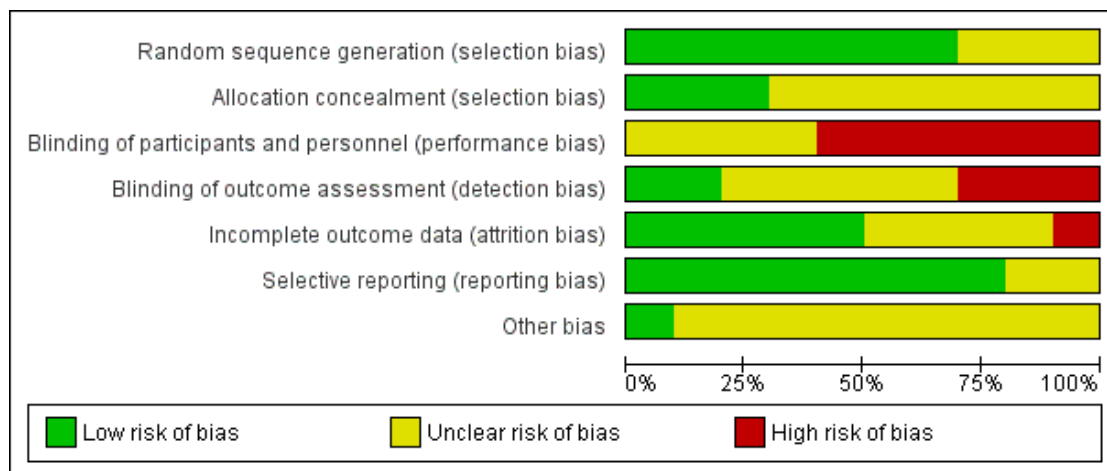


Figure 2. 'Risk of bias' graph: review authors' judgements about each 'Risk of bias' item presented as percentages across all included studies.



Measures of treatment effect

For dichotomous outcomes, we analysed data based on the number of events and the number of people assessed in the intervention and comparison groups. We used these to calculate the risk ratio (RR) and 95% confidence interval (CI). For continuous measures, we analysed data based on the mean, standard deviation (SD) and number of people assessed for both the intervention and comparison groups to calculate mean difference (MD) and 95% CI. Where the MD was reported without individual group data, we used this to report the study results.

Unit of analysis issues

All trials were analysed at the individual level.

Dealing with missing data

We attempted to contact study authors to obtain missing data (participant data, outcome data, or summary data). For participant data, we conducted analysis on an intention-to-treat (ITT) basis wherever possible; otherwise we analysed data as reported. We reported on the levels of loss to follow-up and assessed this as a source of potential bias.

Assessment of heterogeneity

There were no studies similar enough to permit meta-analysis.

Assessment of reporting biases

We assessed the likelihood of reporting bias qualitatively based on the characteristics of the included studies (e.g. where only small studies that indicate positive findings were included in the review), and where information that we obtained from contacting experts and authors or studies suggested that there were relevant unpublished studies. Insufficient studies were included in the review to allow construction of a funnel plot and formal testing of asymmetry, which may indicate publication bias. Should enough studies be included in future updates of the review we plan to undertake these analyses, with the choice of test based on advice in [Higgins 2011](#).

Data synthesis

Due to the diversity of interventions and outcome measures used in the studies, it was not considered appropriate to combine the studies quantitatively. We report data narratively and in tabular form. If it becomes possible to meta-analyse data in the future, we will use the methods set out in the *Cochrane Handbook for Systematic Reviews of Interventions* ([Higgins 2011](#)) and the Cochrane Con-

sumers and Communication Review Group's guidelines (CCCRG 2013).

Subgroup analysis and investigation of heterogeneity

Where there were sufficient trial data, we recorded subgroup analyses according to key demographic characteristics (age, gender, illness, socio-economic and educational status, cultural background). Cultural factors may be especially important in understanding the forms of trust expressed by patients and the conditions necessary for establishing and maintaining it.

Consumer participation

Views on trust are likely to differ between various people. Therefore, before conducting the original review (McKinstry 2006) we sought consumers for a multidisciplinary advisory group aimed at providing a range of perspectives and a personal experience of trust in the doctor. The group was intended to involve healthy people as well as people with various illnesses (chronic and acute). We contacted potential members by email, and gave them background information about this systematic review, its methodology and a description of their role as an advisory group member, allowing them to discuss and comment on the protocol for the review and the interpretation of the findings.

The advisory group was asked to consider whether there were other effects or influences we had not taken into consideration; whether some effects or influences might be difficult to recognise or assess; and whether there were other specific sub-questions we should be trying to answer (Oliver 2004). We asked members to consider whether some effects or influences are more or less important than others, and whether they knew of any relevant studies, literature or publications. Further, we asked them for their opinion about the interventions that are identified in the review and what would increase their trust in the doctor.

The three lay reviewers applauded the merits of the original review and felt that their suggestions for the review had already been covered.

This updated review received feedback from two consumer referees as part of the Cochrane Consumers and Communication Review Group's editorial process.

RESULTS

Description of studies

In this section we describe the studies included in the review, examining the types of comparisons made; the characteristics of the interventions, including the intensity and timing of the interventions; the characteristics of the participants including healthcare provider and patients, and the type of problems with which they

presented; the clinical setting; study design; and the types and timing of outcomes measured. For additional information refer to the [Characteristics of included studies](#) tables.

Results of the search

The original search for McKinstry 2006 identified 4099 titles and abstracts. From these initial searches, five papers were judged to meet the criteria on initial screening (Barkin 2003; Hall 2002; Thom 1999 (two papers); Thompson 2001) but two of these were found to refer to the same study (see Thom 1999) and one, an interrupted time series study, had insufficient data points before and after the intervention (Barkin 2003).

The updated searches conducted in 2010 and 2013 identified a further 14,057 references, reduced to 10,736 references after duplicates were removed (Figure 1). Of these, we excluded 10,719 references, and assessed 17 references in full text. We identified eight papers (Clancy 2003; Clancy 2007; Hsu 2003; Krupat 2004; Nannenga 2009; Pearson 2006; Thom 2006, Tulsky 2011) for inclusion. However, the Hsu 2003 and Krupat 2004 papers related to the same trial (reported here as Hsu 2003), meaning that seven studies were newly-identified for inclusion. Ten studies assessed in full text were excluded, with reasons reported in the table [Characteristics of excluded studies](#).

Included studies

In total we included 10 RCTs involving a total of 11,063 participants in the updated review (Clancy 2003; Clancy 2007; Hall 2002; Hsu 2003; Nannenga 2009; Pearson 2006; Thom 1999; Thom 2006; Thompson 2001; Tulsky 2011).

All of the included studies were published in English and were conducted in North America, and all but two (Nannenga 2009; Tulsky 2011) took place in primary care.

There was considerable heterogeneity among the included studies in terms of their aims, and the format and content of the interventions and their measures of trust. Four interventions (Clancy 2003; Clancy 2007; Thom 1999; Thom 2006) focused on community-based family doctors, one on hospital-based oncologists (Tulsky 2011) and one (Nannenga 2009) on diabetologists. Four interventions focused on patients in Health Maintenance Organisations (HMOs) (Hall 2002; Hsu 2003; Pearson 2006; Thompson 2001). Thom 1999, Thom 2006 and Tulsky 2011 used training interventions directed to the participating doctors, however they were applied in very different contexts: the first in routine primary care, the second aimed at improving cross-cultural sensitivity with Hispanic patients and the third in hospital oncologists. Although Thom 1999 and Tulsky 2011 employed outcome measures both based on Anderson's 'Trust in Physician Scale', Thom modified this by changing the wording (which he subsequently validated) and transforming the output from an 11 to 55 scale to a 0 to 100 scale, rendering comparison difficult. Impact on trust was the

primary outcome in six studies (Clancy 2003; Clancy 2007; Hall 2002; Nannenga 2009; Pearson 2006; Thom 1999), whilst it was the secondary outcome in four studies (Hsu 2003; Thom 2006; Thompson 2001; Tulskey 2011). (see below)

The unit of randomisation was the doctor in four studies (Thom 1999; Nannenga 2009; Thom 2006; Tulskey 2011) and the patient in the other six studies.

We identified no experimental studies which specifically looked for harm as a result of misplaced trust or no trust/lack of trust.

Definitions of trust

Of the 10 studies, only Thom 1999 provided a specific definition of trust in the doctor-patient relationship, namely “the belief or confidence that the physician will provide reliable information and will act in the patients’ interests”. The other studies used validated measures of trust, or trust was measured as part of a more generic validated scale.

Characteristics of the interventions

1) Aims and conceptual bases of the interventions

Three studies assessed educational interventions aimed at doctors, namely coaching in trust-promoting behaviours (Thom 1999); increasing cultural competency (Thom 2006) and improving empathic responses (Tulskey 2011). Four studies explored the impact of different forms of patient education on trust. Nannenga 2009 evaluated the impact on trust of providing diabetic patients with a treatment decision aid to help them choose regarding statin treatment. Clancy 2003 and Clancy 2007 explored if educational group visits for uninsured or underinsured type II diabetics increased trust in the healthcare provider. Thompson 2001 explored the impact of educational health and loyalty visits on new enrollees of an HMO on trust. Three studies explored the effects of providing additional information to patients about their doctor: either the impact of disclosing the physician incentives and financial conflicts of interest (Hall 2002; Pearson 2006), or in order to promote informed choice (Hsu 2003). Six of the studies had as their primary aim to determine the impact of an intervention on physician trust, and four measured trust as a secondary outcome of an intervention.

2) Timing, intensity and general content of the interventions

The interventions’ timing and intensity varied within and between types of interventions. In brief, in the studies of disclosure or enhanced information about physicians, the intervention amounted to as little as access to a website or written or telephone information about the clinician (Hall 2002; Hsu 2003; Pearson 2006); whereas the clinician education ranged from a one-day workshop (Thom 1999) through three 1.5 hour sessions (Thom 2006), to Tulskey

2011 who videoed a series of participant consultations and provided personalised feedback on the clinicians’ consultations with illustrative video-clips.

The patient educational interventions ranged between a monthly 2-hour educational visit for 6 months (Clancy 2003; Clancy 2007) and a single educational session with a nurse or doctor (Nannenga 2009; Thompson 2001). Further information about the trials can be seen in the Characteristics of included studies table.

3) Characteristics of participants providing interventions

Medical education:

In Thom 1999, doctors’ training was conducted by two academic family practice physicians and a sociologist who had previously led focus groups on patient-physician trust. The control group had no additional training.

In Thom 2006 the instructors in the interventions included the authors of the paper, two other doctors with expertise in cultural competency and experts in training and the use of interpreters. The control group received feedback on patient-assessed cultural competency only.

In Tulskey 2011 the intervention was provided by the investigators, which included medical doctors and sociologists. They provided a personalised CD with annotated videoclips gleaned from videotapes made by the participant. The control group received a lecture on empathy and communication delivered by the investigators and were given a CD with general information not tailored to their own consultations.

Patient education:

In Nannenga 2009 the decision aid was developed with extensive input from patients with diabetes as well as clinicians (endocrinologists and primary care physicians) The control intervention was a standard information pamphlet. The intervention was either provided by a researcher before the patient saw the clinician or by the clinician themselves. The control group did not receive the decision aid.

In Clancy 2003 the educational intervention was led by both a primary care internal medicine physician and a diabetes nurse educator. Prior to the study both had to read pertinent literature and the orientation manual. They were then trained at a regional centre and observed several group visits in session. Clancy 2007 used the same intervention except that the trainer was a physician who had previously conducted group visit training.

In Thompson 2001 there were three levels of intervention. The doctor-only intervention was carried out by 20 doctors from the HMO. These doctors received one hour’s orientation to the tools and goals of the visits. The doctor followed by health educator intervention included doctors from the HMO as above with whom

the patient was usually subsequently empanelled. The health educators were two registered nurses and two health educators (no details were provided of their specific training for this role). The intervention groups were led by a doctor and health educators who had received one day's training on the curriculum with videotaped feedback to improve their presentation and facilitation styles.

Disclosure of financial incentives and enhanced information about physician:

In [Hall 2002](#) the disclosure interventions were devised by the study authors with the assistance of 'an expert panel'. The nature of the person carrying out the telephone follow-up to clarify the disclosure and ensure comprehension was not recorded.

In [Pearson 2006](#) the intervention, a disclosure letter, was designed by the chief medical officer of each medical groups with the goal of providing enough information for the subject to make an informed choice about their provider.

In [Hsu 2003](#) the intervention was provided by the HMO. The specific information about the providers was either provided by a research assistant by telephone or by a specific web-site.

4) Characteristics of the participants

All studies recorded age, gender, education and basic ethnicity and a measure of health status of the participants. All were adults. The broad characteristics of the participants are summarised here. Further information is given in the [Characteristics of included studies](#) tables.

In four studies ([Hall 2002](#); [Hsu 2003](#); [Pearson 2006](#); [Thompson 2001](#)) the interventions targeted patients of HMOs; four ([Clancy 2003](#); [Clancy 2007](#); [Thom 1999](#); [Thom 2006](#)), family practitioners and their patients; one ([Tulsky 2011](#)) oncologists and their patients; and one ([Nannenga 2009](#)) diabetologists and their patients. The studies varied in their participant recruitment strategies. [Thom 1999](#) recruited local doctors who had expressed an interest in the physician-patient relationship and they in turn recruited patients attending their practices. [Thom 2006](#) recruited physicians and patients, seen in the last 12 months with hypertension and/or diabetes, from rural and urban primary care practices. [Tulsky 2011](#) recruited clinicians and their patients who had advanced cancer and of whom their clinician "would not be surprised if they died or were admitted to the intensive care unit (ICU) within one year". [Thompson 2001](#) considered all new patients joining the HMO from five centers. [Clancy 2003](#) selected patients through an electronic records search of 2000 patients attending a Primary Care Centre with an glycosylated haemoglobin (HbA1c) level of more than 8.5%, serving a mainly deprived under-insured population. [Clancy 2007](#) recruited in same way but allowed a slightly lower HbA1c level of over 8%. [Hsu 2003](#) selected patients who were aged 30 or older and not linked to a primary care provider. In [Nannenga 2009](#), eligible patients were those who had type 2

diabetes, had been referred to the clinic, and had no contra-indications to a statin. In [Pearson 2006](#) eligible patients were aged over 25 and had been listed as a patient for more than a year with the medical insurer. [Hall 2002](#) randomly selected patients who had been with their plan for at least 2 years and had seen a primary care physician at least twice.

Gender, age, ethnicity and number of participants varied widely between trials and further information can be found in the [Characteristics of included studies](#) tables.

Outcomes measured

Trust

All studies measured patient trust in their physician, although several different measures of trust were used. In nine studies this was a measure of trust in a physician, but in [Thompson 2001](#) this was trust in "the health care professionals" at the HMO of which the patients were members. In [Hall 2002](#) and [Thompson 2001](#), trust in the insurer was also measured.

[Thom 1999](#) used a modified version of the Anderson and Dedrick 11-item trust scale ([Anderson 1990](#)). This was modified to be suitable for use in primary care and the labelling on the scale changed to yield a lower mean score (to avoid a ceiling effect). The new scale was psychometrically evaluated before use ([Thom 1999](#)). [Thom 2006](#) used the 7-likert response items in the trust sub-scale of the Primary Care Assessment Survey, a previously validated tool ([Thom 2006b](#)). [Tulsky 2011](#), [Clancy 2003](#), [Clancy 2007](#) and [Nannenga 2009](#) measured trust using the previously validated Trust in Physician score ([Anderson 1990](#)). [Thompson 2001](#) used a global statement rated on a 10-point scale to measure patients' trust that the physicians of their HMO had their best health interests as their top priority. Although this measure had face validity and was in the format of previously-validated knowledge scales, it is unclear if the scale was psychometrically tested or underwent formal validation studies. [Pearson 2006](#) used a 5-point Likert scale to measure trust, but it was difficult to assess whether this had been properly validated. [Hsu 2003](#) adapted a previously-used trust measure by adding an additional three questions, two of which had been developed before and not used, and one which was added for their study ([Thom 1999](#)). [Hall 2002](#) used two previously-validated scales for measuring trust in physicians and insurers ([Hall 2002](#); [Zheng 2002](#)). [Table 1](#) describes the scales used for trust and how they compare.

Satisfaction

Five studies measured satisfaction. [Thom 1999](#) used the Consumer Satisfaction Survey ([Davis 1991](#)). [Thompson 2001](#) used a single global statement rated on a 10-point scale to measure satisfaction with the HMO. Although this measure had face validity and was in the format of previously-validated knowledge scales,

it is unclear if the scale was psychometrically tested or underwent formal validation studies. [Thom 2006](#) used 10 items from the previously validated patient satisfaction questionnaire ([Davis 1991](#)). [Hsu 2003](#) measured satisfaction using 12 items based on the medical outcomes study ([Rubin 1993](#)). [Clancy 2003](#) used the Patient Care Assessment Tool (PCAT), a well-validated tool for evaluating patient satisfaction in underserved populations ([Shi 2001](#)).

Knowledge

Six studies measured knowledge levels. [Hall 2002](#) checked the patients' knowledge of physician incentives. [Thompson 2001](#) measured knowledge of appropriate screening and immunisation schedules. [Pearson 2006](#) measured knowledge of method of compensation for the primary care physicians within the primary care group. The questions were developed from research instruments - some of which had been validated ([Levison 2005](#)). Although [Nannenga 2009](#) did not itself report knowledge, a linked paper from the same trial surveyed the knowledge of the patients about the merits of using statins using a 14-question tool ([Weymiller 2007](#)). There is no information about the validity of this questionnaire.

Other outcomes

In addition to the above outcomes, [Thom 1999](#) measured number of referrals, diagnostic tests, proportion of visits to study physician, number of patients remaining with physician, and self-reported adherence.

Using a 10-point scale, [Thompson 2001](#) also measured intervention patients' perceptions of how helpful the induction visit was, if they had learned something which might save a visit in the future, if their questions had been answered, and, as a result, whether or not they perceived a need to have another appointment within the next month, their likelihood of staying with the HMO, their agreement with guidelines and likelihood to set goals for lifestyle improvement.

[Hall 2002](#) measured prior disputes with physician and insurer and adequate choice of physician and insurer.

[Pearson 2006](#) also measured degree of confidence in knowing enough about physicians' methods of compensation to be able to judge the possible influence on healthcare decisions and loyalty to physicians and the physician groups. This was again taken from previously-designed research instruments ([Levison 2005](#))

Although [Nannenga 2009](#) measured trust, only the linked paper by [Weymiller 2007](#) also measured patient perceptions of the infor-

mation, willingness to recommend the way statins were discussed and desirability of the process.

[Thom 2006](#) also measured cultural competency using the Patient Reported Physician Cultural Competence Scale (PRPCC), and some disease specific outcomes, to see if there had been a change in weight, blood pressure or HbA1c levels if relevant.

In addition to the above, [Hsu 2003](#) measured the amount of time the patients spent with their primary care provider, explanations, technical skills, personal manner, use of the latest technology, focus on prevention, concern for subject's well-being, listening skills, familiarity with subject's medical history, and level of shared decision making. In addition, it was recorded if a patient would recommend the physician to their friends and family.

[Tulsky 2011](#) measured, in addition to trust, the frequency of empathic statements made by doctors, patients' perceptions of empathy, therapeutic alliance, and knowledge.

[Clancy 2007](#) also measured perception of care by using domains of the PCAT survey such as cultural competency, community orientation and perception of continuity of care.

There were no reported measures in any of the studies of symptom resolution, change in health status, quality of life or self esteem. No data were presented on doctors' perception of patients' trust or perceptions regarding doctors' trustworthiness.

Excluded studies

We report 10 studies in the [Characteristics of excluded studies](#) table. Six studies were excluded because they did not meet the criteria in [Types of studies](#) ([Barkin 2003](#); [Campbell 2005](#); [Levison 2005](#); [Mazor 2004](#); [Mazor 2005](#); [Wu 2009](#)).

[Saha 2011](#) used videotapes of consultations representing different levels of patient-centred communication to explore how communication style affected trust in physician among other outcomes. Although the presentation of the videotapes was randomised, we considered it to be essentially an observational study. We excluded three studies either because they reported insufficient data ([Meloche 2003](#)) or did not use a validated measure of trust ([Chung 2012](#); [Van Voorhees 2009](#)).

Risk of bias in included studies

We present a 'Risk of bias' summary and graph in [Figure 2](#) and [Figure 3](#). Further information about the risk of bias in the individual studies is described below.

Figure 3. 'Risk of bias' summary: review authors' judgements about each 'Risk of bias' item for each included study.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Clancy 2003	+	+	-	?	+	?	?
Clancy 2007	+	+	-	?	?	+	?
Hall 2002	+	?	?	?	?	+	?
Hsu 2003	+	?	-	-	?	?	?
Nannenga 2009	+	+	-	+	+	+	?
Pearson 2006	?	?	?	?	?	+	?
Thom 1999	+	?	?	+	+	+	?
Thom 2006	?	?	?	-	+	+	?
Thompson 2001	?	?	-	?	-	+	?
Tulsky 2011	+	?	-	-	+	+	+

Allocation

Sequence generation

Computer programs were used to randomise patients in six studies, randomisation was conducted by a statistician in one study (Tulsky 2011) and in three the method of randomisation was not described (Thompson 2001; Pearson 2006; Thom 2006).

Allocation concealment

Three studies had adequate methods for concealing the allocation sequence (through use of sealed opaque envelopes (Clancy 2003; Clancy 2007)); and other methods (Nannenga 2009), while in the remaining seven studies the method of allocation concealment was unclear.

Blinding

Blinding of participants was not possible in terms of those receiving an intervention (e.g. an educational intervention or additional information about a clinician), although in four studies we rated blinding as 'unclear risk' as no information was provided in the study.

In terms of assessment of outcomes by patients of doctors receiving an educational intervention, in only one study were patients blinded (Tulsky 2011) and in one it is unclear (Thom 1999). In two studies, interviewers or data collectors were blinded (Nannenga 2009; Thom 1999). One research group attempted to keep the provider and patients naive to the study objective although they were not specifically blinded to the intervention (Nannenga 2009).

Incomplete outcome data

Five studies reported adequate follow up rates. In Thompson 2001 there was a large disparity in follow up between controls and intervention groups which constituted a high risk of bias. The other studies (Clancy 2007; Hsu 2003; Hsu 2003; Pearson 2006) provided insufficient data, leading us to conclude that there was an unclear risk of attrition bias for these studies.

Selective reporting

Because we did not have access to the original study protocols, we cannot fully judge whether there may have been any selective reporting of outcomes. Clancy 2003 and Hsu 2003 were rated as unclear risk of bias for this domain, while for the other eight studies there was no evidence of selective reporting.

Other potential sources of bias

Protection against contamination from intervention group to control group

There appeared to be little potential for contamination to occur in two studies (Hsu 2003; Tulsky 2011). Thom 1999 and Hall 2002 restricted the study to one person per household to avoid contamination and one used a cluster randomisation technique to avoid contamination (Thom 2006). The others mentioned no specific measures to avoid contamination.

Baseline differences

Six of the RCTs made baseline measurements suggesting that the intervention and control groups were sufficiently comparable at baseline. Where there were baseline differences between the groups, authors adopted methods to mitigate this. Hall 2002 used a mixed modelling technique. The regressions adjusted for baseline differences between the groups that were associated with trust scores as well as differences in the time of survey. Hsu 2003 made comparisons after adjusting for demographic differences.

Intention-to-treat analysis

Intention-to-treat (ITT) analysis was not appropriate for two studies (Hall 2002; Thom 1999) as all participants were entered into them and followed up. Thompson 2001 had the potential for ITT analysis and it was not used. It would have been useful, as the most apparently successful intervention (group visit) was the least well taken up. Success may therefore have reflected an underlying enthusiasm among participants rather than the success of the intervention. Thompson 2001 did, however, collect and present outcome data on patients who had either refused to take part or agreed then failed to take part in the intervention. These patients had similar outcomes to those in the control group. Hsu 2003 used ITT analysis, which was based upon all randomised patients. The other studies did not mention ITT.

Unit of analysis errors

Four studies (Clancy 2003; Clancy 2007; Hsu 2003; Thom 1999) made adjustments for potential clustering effects.

Thom 1999 accepted that, due to the non-independence of observations from the same patients seen by the same physician, a technique which tested clustered data should be used. The specific model therefore included a study phase variable (before/after intervention), and an intervention group variable (intervention/control), dummy variables for each physician pair and two-way interaction terms.

Hall 2002 used a mixed modelling technique. The regressions adjusted for baseline differences between the groups that were

associated with trust scores as well as differences in the time of survey.

[Hsu 2003](#) made comparisons after adjusting for demographic differences. They also used a cluster function to adjust for any potential clustering effects seen in patients with the same primary care physician. In addition they excluded the 12% of patients who had not yet visited their primary care physician.

[Clancy 2003](#) compared treatment versus control to check for any group cluster effect. Also, missing values were imputed by the average observe outcome at baseline. Missing values at follow-up were imputed by using the previous measure for the same patient.

[Clancy 2007](#) also looked for a cluster effect. Missing values were imputed by using a average score for the outcome, except the PCAT where missing data were replaced by 2.5 as per the authors' instructions.

In the [Thompson 2001](#) study not all sites in the study tested all the interventions. This may have some influence on the comparisons between interventions. The authors remarked on this but no specific analysis was undertaken to allow for it.

The remaining four studies did not mention any potential for unit of analysis error and how they would deal with it.

Effects of interventions

In this section we report on the results of each trial. As each trial used different interventions and measures of trust we report them individually. The studies are grouped into similar trials.

Medical education: trials training physicians in behaviours associated with trust

[Thom 1999](#) investigated the effect of training physicians on patients' trust in their physician, using a trust scale modified from [Anderson 1990](#). The mean trust scores post intervention for intervention and control groups were 74.4 and 76.2 respectively. The net difference after baseline differences were considered was -0.6 in favour of control group participants, which was not significant. The trialists also found no significant differences in patient satisfaction (mean difference 0.5 in favour of intervention), humanness (mean difference 3.8 in favour of intervention) or physician satisfaction (mean difference 2.3 in favour of control) (see [Table 2](#)). In addition the trialists found no significant difference in referrals (mean difference 0, 95% confidence interval (CI) -0.26 to 0.28) or use of diagnostic tests (mean difference 0.1 in favour of control, 95% CI -0.88 to 0.68). There were similar non-significant differences found in the proportion of patients choosing to remain with the physician (difference 0.4% in favour of control), proportion of visits to the study physician (as opposed to other physicians) (difference 0.9% in favour of intervention) and the proportion of patients who described themselves as always adherent (difference 3.2% in favour of intervention).

The correlation between specific physician behaviours at the index visit and patient trust at six months was also examined. The

five behaviours most correlated with trust were: 'letting you tell your story'; listening carefully; asking thoughtful questions; never interrupting, always taking time and explaining what you need to know about your problems. However these behaviours were among those that showed the least net difference between intervention and control physicians. No subgroup analyses were done as the trial was insufficiently powered to support these.

[Thom 2006](#) evaluated the effect of training physicians in cultural competence on reducing health inequalities and improving patient care, comparing training in cultural competence to simple feedback of cultural competence scores. The trialists hypothesised that increased cultural competence would increase trust. Trust was measured using the seven Likert-response items in the trust subscale of the previously validated Primary Care Assessment Survey at baseline, 3 months and 6 months. There was no significant change in the outcomes from baseline to the end of the study in either group or between groups. The main change from baseline was 1.93 (standard deviation (SD) 8.6) in the training and feedback group and 2.54 (SD 15.6) in the feedback-only group, with a mean difference of 0.61 in favour of feedback-only (see [Table 3](#)). The authors performed a post hoc subgroup analysis to determine if the intervention might be more effective depending on the characteristics of the population surveyed including number of visits, primary language, age, gender and lingual ability of physicians on trust, but found no significant relationship.

[Tulsky 2011](#) evaluated whether oncologists who received a CD-ROM training program on communication skills that was personally tailored with exemplars from their own audio-recorded clinic visits would increase oncologists' ability to empathise with negative emotions expressed by cancer patients. They hypothesised that such improvement would also result in increased trust. Patients whose oncologists were in the intervention group reported very slightly higher trust in their oncologists (as measured by the Trust in Physician Scale ([Anderson 1990](#))) than patients whose oncologists did not receive the CD-ROM; this difference was statistically significant (mean difference 0.1 (95% CI 0.0 to 0.2), $P = 0.036$). Patients in the intervention group experienced significantly greater perceived empathy as well as a significantly greater sense that their oncologists understood them as "a whole person". Oncologists in the intervention group used significantly more empathic statements and were significantly more likely to respond to negative emotions empathically than control group oncologists ([Table 4](#)).

Patient education: trials involving educational interventions for patients

[Thompson 2001](#) investigated the effect of three different types of enrolment visit (traditional doctor only, doctor with health educator, and group visit led by doctor and educator) on trust of health plan health professionals, loyalty, satisfaction, perceived knowledge of screening and immunisation programmes, and pa-

tients' perception of their own healthy lifestyle (all rated on a 1 to 10 scale). In addition, patients were tested on their knowledge of screening and immunisation programmes. This test varied according to gender and age and was scored as a percentage of total possible score.

Trust of the health plan health professionals rose significantly following the visit in comparison with control for only one type of visit (the group visit) (change in control 0.3 versus change in group visit 1.9, difference 1.6). Patients attending group visits and the 'doctor and health educator' were significantly more likely than controls to say they would stay with the plan. Patients also described significantly increased satisfaction and improved knowledge of screening immunisation and lifestyle issues and to say they agreed with HMO guidelines (see Table 5). Information on these outcomes was also presented for patients who had refused visits and failed to attend. These two groups had similar results to the control group. However, the analyses were not done on an intention-to-treat basis. This may be important, as the group visit intervention which had the most positive effect had a large number of refusers and failures to attend. No subgroup analyses by demography or ethnicity were presented.

Clancy 2003 and Clancy 2007 evaluated the effects of group educational visits on underinsured or uninsured patients with type 2 diabetes mainly on delivering care. Trust was evaluated as a secondary outcome using the Trust in Physician scale. In addition, measures of quality of care and feasibility and acceptability of the group visits were evaluated using the primary care assessment tool. In Clancy 2003 the authors found that overall there was a significant increase in the total trust score for the patients who attended the group visits compared to those who received usual care; they provide means for each component of the trust questionnaire but do not provide the actual total trust score (Table 6). Furthermore, the authors stated that significant positive increases occurred in the patients' perception of co-ordination of care, community orientation and cultural competency.

The trial was essentially repeated in Clancy 2007. On this occasion the authors found that there was no significant difference in trust between patients in the group visit arm and those receiving usual care. Again, detailed results were not provided, but there were significant positive increases in patients' perception of co-ordination of care, community orientation and cultural competency.

In the trial of a treatment decision aid for a statin in a diabetic population, Nannenga 2009 explored acceptability of the aid, knowledge about options and cardiovascular risk, decisional conflict and adherence to pill-taking three months after the initial visit. Trust, measured using the previously validated Trust in Physician scale, was a secondary outcome. There was a non-significant trend towards higher total trust in the decision aid group. While two of the nine items in the scale showed significant differences from control, the remaining seven items did not, and there was no overall difference between the groups. Patients who received the intervention were significantly more likely to 'trust their doctor to tell them

if a mistake had been made about treatment' and 'to listen well so that he/she understands their needs and concerns' (Table 7). Other outcomes for this study included a significantly increased knowledge score, and significantly less decisional conflict among intervention group participants. Overall the likelihood of having total trust in the physician was associated with an improvement in knowledge, lower decisional conflict and greater patient participation in decision making. However, increase in trust was not associated with an increase in adherence to the statins.

Doctors' incentives: trials including disclosure of financial incentives and enhanced information about physician

Hall 2002 investigated whether disclosure of physician incentives to patients in two different sorts of health plan (capitated or mixed incentive plans) changed trust in the physician or the health insurer (measured on two validated scales). A very small, non-significant increase in trust from baseline occurred in both intervention groups and both control groups. Physician trust was scored out of 50. There was a small, statistically significant, increase in trust in people who were in the capitated plan following disclosure. After adjustment for baseline group differences as well as time effects, the disclosure was associated with a 1.4% increase in physician trust ($P < 0.05$) in one of the intervention groups (capitated plan). (Insufficient data were provided to confirm the calculation or calculate confidence intervals). The authors stated that this was a robust result across a variety of regression models and was also significant when the unadjusted bivariate results were considered. There were no other significant differences for the mixed incentive plans and there was no significant difference in insurer trust in either group, or in physician trust in the other intervention group (mixed incentive plan). The percentage of the population with substantial knowledge of physician incentives rose significantly as a result of the intervention in both health plans. When a subgroup of patients with substantial knowledge of incentives in the post-intervention period was observed, the authors state there was a significant doubling of the effect on physician trust of the capitated intervention group ($P = 0.01$), however the data on which this assertion was based were not presented. Patients with initially low physician trust scores showed no significant change in trust following the intervention. There was no significant difference in the impact of disclosure in different racial groups. Length of enrolment in plan made no difference to either score. Insurer trust was scored on a Likert scale with a maximum score of 55. The mean difference in change in trust in insurer between control and intervention was 0.0 (SD 6.8) in the capitated plan and 0.0 (SD 7.1) in the mixed incentive plan. These effects persisted after adjustment for baseline group differences as well as time effects. The authors also report a subgroup analysis which showed that although disclosure made no significant difference to desire to change physician, there was a significant ($P < 0.05$) increase in the desire to change insurers, even though the measurement of trust in insurers

was not affected. This suggests that the insurance trust instrument used may not be sufficiently sensitive.

Pearson 2006 evaluated the importance of the disclosure of financial incentives in allowing the patient to gain knowledge of the physicians' payment methods and also, as secondary outcomes, how this influenced trust and loyalty. They measured trust with a previously used (although poorly described) scale, after a disclosure letter had been sent to the intervention group. Questionnaires were sent to all participants about 8 to 12 weeks later, in two sites. The disclosure statement did not affect their trust in their physician (mean difference -1.0 in intervention group ($P = 0.71$)) but improved their loyalty to the medical group (mean difference 3.2 ($P = 0.03$)) in one of the sites studied. This difference increased when only those patients who could recall being sent the disclosure statement were considered ($P < 0.01$) (Table 8).

Hsu 2003 matched patients seeking a new primary care provider (PCP) and practitioners, based on beliefs about care, by either giving patients an informed choice or a guided choice (intervention) which took into account patient and provider preferences for shared decision making. The authors measured trust using a nine-item trust scale with responses to each item scored on a five-point Likert scale. The trial also explored the effect of the intervention on patient satisfaction, using an adapted version of the medical outcomes survey, and patients' perception of the process using a specifically-designed scale.

During the intervention period, 85% of subjects obtained a PCP. Intervention subjects significantly were more likely to perceive that they chose their PCP (mean difference 56%; $P < 0.001$), to retain their primary care provider at 1 year (mean difference 24%; $P < 0.001$), and to report greater overall satisfaction with the PCP (mean difference 10%; $P < 0.01$), compared to control subjects who were assigned to a PCP. The intervention subjects also reported greater trust in their PCP on most measures (Table 9), but these differences did not remain statistically significant after adjustments for patient age, gender, ethnicity, education, and health status. There was a significantly increased perception that the clinician knew their patient well (mean difference 14.5%; $P < 0.01$).

DISCUSSION

The purpose of seeking interventions that are helpful in promoting trust is based on the assumption that a variety of desirable attributes such as medication adherence, satisfaction, and continuity of care are associated with global measures of trust. However, these are associations, and there is little evidence that interventions that might improve global trust will necessarily also increase these attributes. Trust is not straightforward to define. While only one study provided a definition of trust (based on the belief that the doctor is acting in the patient's interests), all the studies used

instruments based at least in part on this definition. The instruments used to measure trust in Hall 2002, Thom 1999 and Tulskey 2011 were devised, in part, in discussion with consumers. However only one of the studies (Thom 1999) reported consumer input to plan the content of the intervention. We found relatively few high-quality intervention studies which explored the impact on trust in three ways: providing information about the doctor; improving aspects of the doctors consultation skills; and providing educational interventions to patients.

Summary of main results

This updated review was only able to find ten moderate-quality studies which specifically addressed the issue of improving patients' trust in physicians. We identified eight studies that evaluated interventions which were intended to promote patient trust and two studies that had the potential to decrease patient trust, but did not. The studies gave conflicting results. For trials which did show a statistically-significant improvement in trust, the increase was, in real terms, very small. The trials showing an increase in trust included: a trial of physician disclosure of financial incentives; a trial of providing choice of physician based on concordance between patients and physician beliefs about care; a trial of group visits for new inductees into a health maintenance organisation; a trial of training oncologists in communication skills; and a trial of group visits for diabetic patients. However, trust was not affected in a subsequent larger trial of group visits for uninsured people with diabetes, nor with a decision aid for helping choose statins, another trial for disclosure of financial incentives or specifically training doctors to increase trust or cultural competence. There was no evidence of harm from any of the studies.

While the strength of this review lies in thoroughness of searching for robust interventions that may affect trust, the lack of high-quality trials does mean that limited conclusions can be drawn from it. Additionally, the review is limited by the fact that trust is a difficult and often subjective concept which in many cases may be better understood through different research methods, such as qualitative approaches. Also, trust in doctors and groups of doctors is generally high anyway, so it maybe that ceiling effects frustrate the possibility of demonstrating anything other than small changes.

Overall completeness and applicability of evidence

This is a reasonably new area of research, so it is perhaps unsurprising that there were so few high-quality intervention studies. One of the recent drivers for such research, and interest in trust in general, has been the rise of managed care in the United States and the perception that such care has the potential to damage the doctor-patient relationship, given that the doctor has duties not

only to the patient, but also to minimising costs for the insurer (Mechanic 1996a; Mechanic 1996b). Although the rise in the use of guidelines in many countries has provoked similar concerns, it is not surprising that all of the identified studies are North American and it would be valuable to further validate the 'trust' measures so that they could be applied to other settings. Additionally, we contacted four authors involved in the identified studies who continue to be active in this field. They confirmed that, to their knowledge, no other such studies had been performed. The lack of high-quality studies and the heterogeneity of those we identified makes it difficult to understand how these interventions could have policy or clinical implications. Further, the interventions were targeted at specific groups and with no more than two interventions targeting the same group the applicability to other groups or settings is difficult to assess.

Quality of the evidence

As with all educational interventions implemented in one centre, it is difficult to conclude from the experience of Thom 1999, Thom 2006 and Tulskey 2011 that training in behaviours associated with trust is effective or ineffective. The results are unlikely to be solely due to the ability of the studies to detect a difference. Although the Thom 1999 study was powered to find only a relatively large difference between intervention and control, in fact the actual change in trust measured was slightly negative when baseline measurements were taken into account, so power was unlikely to have been an issue. The physician behaviours found to be associated with trust in this study did not change significantly, so perhaps it is unsurprising that trust in the physician did not change either. Indeed it appeared that the skills found to be associated with trust in the study were not particularly focused upon in training. Other research has shown that multiple training sessions, with opportunities to practice new skills between sessions, may be more effective than one session (Barkin 2003; Roter 1995).

Time-frame could perhaps be a limitation of the studies as it may take time to 'earn' trust (Ozawa 2013). As a result, in Thom 1999 and Thom 2006 it is not clear whether it was specifically this training package that was ineffective, or if all such packages are likely to be ineffective. Ideally several types of training should have been piloted for effectiveness before selecting one for trial. It is noteworthy that Thom 1999 targeted physicians who were already interested in communication and perhaps had less to gain than others from such an intervention. Finally, it may be that the presentation of new behaviours without an underlying attitudinal shift may not convince patients that their doctor is more worthy of trust. Further research is required to explore this type of intervention. In contrast, the success of Tulskey 2011 in enhancing trust may have been due to the intensity of the intervention, which was personally tailored to the doctor based on his or her own consultations, and which did demonstrate a change in the desired skill (empathic response to patient disclosure).

Thompson 2001 concluded that one type of patient induction event (the group visit) was effective at increasing trust in 'the health professionals' in their health maintenance organisation (HMO). This conclusion must be treated with some caution, however. Less than half of those who were invited attended any of the interventions, falling to 27% in the case of group visits. Of these, 75% of attendees completed both questionnaires. While some of the non-attendees/refusers were subsequently followed up by questionnaire, responses were lower (around 65%). An intention-to-treat (ITT) analysis may have reduced any advantage this type of intervention had over others. There are also concerns about the validity of the measure used. As with educational interventions for clinicians above, it is difficult to generalise from the results of a study of an educational intervention carried out by a relatively small group of professionals (particularly health educators who numbered only three and may be enthusiasts). It is not possible to know if such an intervention would work if carried out in a different HMO by different educators. Further work is required to elucidate this and should be carried on an ITT basis. The two Clancy trials (Clancy 2003; Clancy 2007) and that of Nannenga 2009 looked at interventions designed to improve patient outcomes with group visits and a decision aid to help diabetic patients choose statins respectively. They came to conflicting conclusions; Clancy 2003 showed a significant difference between groups in trust overall, but more in some aspects of trust than others. This was not replicated in the follow-on trial which showed no improvements in trust. This is interesting as the second trial was larger and looked at more providers (six compared to one). Both trials were well managed and structured and overall did show improvements in other outcomes. Nannenga 2009 showed that trust is not increased by a decision aid and interestingly nor were clinical outcomes, although the patient experience was.

The interventions in Hall 2002 and Pearson 2006 were specific disclosures about physician benefits with reference to particular health plans. The projects were conducted against a backdrop of concern that such disclosures might reduce trust in doctors. According to the study authors in Hall 2002, the disclosure intervention was set in a positive way, emphasising the impact of incentives on reducing 'unnecessary' rather than 'expensive' screening and treatment. Nevertheless, it was a well-conducted study that made strenuous efforts to follow up participants, and the finding that such disclosures (albeit positively phrased) did not reduce trust is likely to be robust, as is the finding that trust in some patient groups (those who had learned most about incentives from the intervention) was increased. Pearson 2006 described how, with respect to affecting trust in physicians, the number of individual tests a physician prescribes is unimportant, but experience, number of patients and their complexity are important. However, unlike Hall 2002 the authors did not find that the disclosures made a significant difference to level of trust. Also, Pearson 2006 was less robust than Hall 2002 in follow-up of patients. These studies, however, were carried out by only three HMOs, so to further prove

the robustness of the studies, research in other HMOs is required. The study by [Hsu 2003](#) indicated that helping a patient to choose their provider by allowing the patient to choose a doctor whose views are similar does significantly increase trust, and this does not disappear when adjusted for patient variables. However, over half the eligible subjects did not return their questionnaires. Also limiting the usefulness of this trial are that it was set in a single group model healthcare centre and the trialists only measured the outcomes at one point in time. This would need to be replicated on a larger scale with more time points for it to be more robust. However, this aside, it introduces an interesting concept and one that should definitely be explored further.

Put together, these studies suggest that trust in a doctor is a difficult characteristic to improve, at least among people willing to take part in enhanced educational activities (who may already have high levels of trust). Exploring the impact on trust of intensive educational interventions, for example pulmonary rehabilitation, which also improve clinical outcomes fairly immediately, may be more positive.

Potential biases in the review process

We believe that we have identified all the studies of interventions thought to have an impact on trust that met our study design criteria up to March 2013, as we had a comprehensive search strategy which identified over 14,000 records for this update alone, and independent assessment of studies for inclusion. There may be some unpublished trials we have missed. However we contacted authors involved in the identified studies who continue to be active in this field. They confirmed that, to their knowledge, no other such studies had been performed. For future updates of the review we will additionally search online trials registries and again update the database search strategies to take into account any changes in indexing and search syntax before searches are run.

Agreements and disagreements with other studies or reviews

As mentioned above, the studies included in the review give conflicting results. Hillen and colleagues ([Hillen 2011](#)) explored the wider literature around cancer patients' trust in their physician, and largely drew similar conclusions with respect to the lack of evidence for interventions that affected cancer patients' trust in their doctor. The authors called for more research exploring both the nature of trust and how the interaction between patient and physician affects that trust.

AUTHORS' CONCLUSIONS

Implications for practice

Overall, there remains insufficient evidence to conclude that the interventions evaluated may increase or decrease trust in doctors and groups of doctors. The few experimental studies carried out to date have been inconclusive, methodologically weak or lack generalisability. In particular, trial work has almost exclusively taken place in North America, and transferability to other countries and cultures is unknown. However, this does not mean that trust is not an important part of the doctor-patient relationship and it has been shown to increase patient satisfaction, adherence to treatment, and continuity of care.

Implications for research

As most work has taken place in North America to date, further research is required to explore the applicability of definitions of trust and the validity of different measures of trust across different socio-cultural contexts and with different types of patients, such as those with life-long physical disabilities, mental health problems and learning difficulties. This should include robust mixed-method research.

With regard to changing doctor behaviour in a way that enhances trust, further research is required, firstly to compare the effectiveness of different training methods to improve physician behaviours which may enhance trust (such as humanistic or communication skills) or the use of a patient-centred or decision-sharing approach. Once effective methods have been established, these interventions should be tested as complex interventions in clinical trials. Trials should be large enough or take place in a variety of sites such that the effect on trust of different socio-cultural factors, including populations such as those with communication difficulties, and those long-term severe illness, may be tested. This could also include the evaluation of patients who are insured versus those uninsured.

Ideally such trials should include non-enthusiasts. Given the difficulty of engaging such individuals in research, however, an alternative is to make use of natural experiments where policy changes are intended to impact upon trust, and using an interrupted time series design to test the effects of such interventions. Studies should be of sufficient duration to allow trust to develop and allow changes over time to be studied.

The way we measure trust should be further investigated to ensure that we are measuring the right aspects of trust in different contexts and time-frames ([Ozawa 2013](#)).

We found qualitative and observational studies which demonstrated relationships between specific features of the consultation and trust (e.g. such as patient-centredness, the length of the consultation, continuity of care, how a doctor dresses). These features may have been amenable to an intervention study to determine the impact on trust and should be considered for future. (One

small RCT on the impact of doctors' dress was excluded from the review because it did not use a validated measure of trust).

Additionally we highlight a need for trials to test the following:

- The effect on trust of healthcare professionals making use of behaviours which demonstrate caring, for example personal telephone contact about test results and referrals, and attempting to resolve disputes between professional and patient, increasing patient centredness, lengthening the consultation;
- The impact of education of patients on physician policy and practice, on use of guidelines (which may restrict patient choice), confidentiality, and error avoidance;
- The impact on trust of management of medical errors including mis/under/over diagnosis;
- The impact on trust of more intensive educational interventions for patients such as pulmonary or cardiac rehabilitation classes;
- The effect on trust of allowing patients a wider choice of physician;
- The effect on trust of increased continuity of care;
- The effect on trust of lengthening the consultation;
- The effect of doctors' dress (while this may seem superficial, unlike most interventions it is a relatively easy intervention to adopt);

- The impact of any interventions to improve trust on outcomes associated with trust, such as adherence to medication and remaining with doctor/HMO;

- The impact of interventions on the trust of third party carers who may assist communication with the doctor.

Finally, researchers generally should consider trust as an outcome when evaluating interventions where trust may be adversely affected.

ACKNOWLEDGEMENTS

We are grateful for the helpful advice and support of Dr. Megan Pricor, Managing Editor, Cochrane Consumers & Communication Review Group; the late Dr. Dominique Broclain, our review editor for the 2006 iteration of the review; Dr. Dell Horey our editor for the current update; the peer reviewers for their constructive criticism; lay reviewers; the Cochrane Consumer Network for assistance with the Plain Language Summary; John Kis-Rigo and Kieran McKinstry for helping update the searches; and experts David Thom, Mark Hall, Rajesh Balkrishnan and Carol Ashton who provided us with additional information. We are also grateful to George Freeman and Richard Ashcroft who contributed to the original review (McKinstry 2006), but were unable to participate in the updated review.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

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

Clancy 2003

Methods	RCT, intervention versus usual care. Unit of randomisation: Patient Commenced May/June 2001 for six months.	
Participants	<p>Selection of diabetic patients attending adult primary care centres, identified from computer records. Telephone or on-site invitation using agreed script</p> <p>Clinical Setting: Primary care in Denver Colorado. US. Public and uninsured patients</p> <p>Characteristics of intervention providers: Primary care internal medicine physician and diabetes nurse</p> <p>Characteristics of participants: Identified patients from a pool of over 200, with an age >18 and HBA1c of > 8.5% who did not meet any exclusion criteria (substance dependence, pregnancy, dementia, inability to understand spoken English) were then invited to participate through telephone or on-line solicitation using a standardized script that was presented by one of three trained researchers. 242 patients contacted to reach the recruitment goal of 120 patients. 59 were randomised to the intervention and 61 to usual care. 10 patients in the usual care group and 7 patients in the intervention group withdrew from the study. The average age was 54; 78% female; 77.5% African-American; 21% Caucasian; 76.7% retired or unemployed; average reading level 7.5</p>	
Interventions	<p>Intervention aimed at: Patient.</p> <p>Content of Intervention: usual care versus group visits led by primary care clinician and diabetes nurse, monthly for six months, lasting two hours. Modelled after group approach. Socialisation followed by educational session, Q&A, planning next session and one-to-one care. Clinicians trained at the CHCC Denver Colorado</p> <p>Adherence: Overall attendance rate was 69%, with 52/59 finishing trial in intervention group and 51/56 in usual care group</p>	
Outcomes	<p>Trust as a primary outcome.</p> <p>Baseline measurements made: Trust - TPS and PCAT (Table 1).</p> <p>3 month and 6 month outcomes - TPS, PCAT, patients attendance at group visits</p> <p>Authors provided a summary of the ten questions for TPS, but no global outcome</p>	
Funding	Study supported by Improving Chronic Illness Care program funded by the Robert Wood Johnston foundation and South Carolina Excellence Initiative for Eliminating Disparities in Healthcare programmes, funded by the Agency for Healthcare Research and Quality	
Notes		
<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated in blocks of four.

Clancy 2003 (Continued)

Allocation concealment (selection bias)	Low risk	Allocated by sealed envelopes.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not possible to blind participants, but personnel blinded unless patients volunteered information
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not mentioned in text.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Study tried to make up for incomplete data with previous data
Selective reporting (reporting bias)	Unclear risk	Not all data given.
Other bias	Unclear risk	Unlikely to be protection against contamination. Small numbers

Clancy 2007

Methods	RCT, intervention versus usual care. Unit of randomisation: Patient Recruitment - September 2002 to February 2003. Outcomes measured at 6 and 12 months
Participants	Setting: USA Primary Care. Type 2 diabetic adults with HbA1c > 8%. 506 patients contacted, 186 patients recruited: 96 randomised to intervention and 90 to usual care. Average age 56.1. 72% female, 82.8% African American; 34.2% married. Average health literacy level: sixth grade. 26% in employment. 3 patients died during the course of the study and 27 patients (13 usual care and 14 intervention) withdrew, all but one with reasons
Interventions	Intervention aimed at: Patient. Content of Intervention: usual care versus group visits led by primary care clinician and diabetes nurse, monthly for six months, lasting two hours. Modelled after group approach. Socialisation followed by educational session, Q&A, planning next session and one-to-one care. Clinicians trained at the CHCC Denver Colorado
Outcomes	Trust as primary outcome Baseline measurements made: Trust - TPS and PCAT (Table 1). Outcome evaluated at 6 months and 12 months - TPS, PCAT, patients' attendance at group visits Authors provided a summary of the ten questions for TPS, but no global outcome
Funding	Project supported by the Agency for Healthcare Research and Quality, the Robert Wood Johnson Foundation and the National Institute of Health and National Institute of Neurological Disorders and Stroke
Notes	

Clancy 2007 (Continued)

<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated allowing for stratification and blocking.
Allocation concealment (selection bias)	Low risk	Sealed envelopes following baseline data collection.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Clinic personnel were blinded unless revealed by patient. Patients not blinded
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	The research assistants were blind to group assignment but outcome measures were by self-report
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Missing data replaced by last study observations or average observed value, but poor reporting of data
Selective reporting (reporting bias)	Low risk	All outcomes reported.
Other bias	Unclear risk	Unknown.

Hall 2002

Methods	RCT. Unit of randomisation: Patient. Duration: Two batches of telephone surveys - September 1999 to September 2000
Participants	<p>Clinical setting: USA, Primary Care Patients of two different HMO health plans.</p> <p>Numbers of patients followed up in intervention group: 515 in capitated plan and 670 in mixed incentive group Numbers of patients followed up in control group: capitated plan controls = 382, mixed incentive controls = 351</p> <p>Characteristics of intervention providers: The disclosure interventions were devised by the authors with the assistance of 'an expert panel'. The nature of the person carrying out the telephone follow up to clarify the disclosure and ensure comprehension was not recorded</p> <p>Characteristics of participants: The sample was stratified to ensure a roughly even number of subscribers who had been with the plans for either between two and four, or more than four years. Of 4024 patients initially approached, 3844 were successfully contacted; 15.6% of those contacted were ineligible (leaving 3246 eligible) and a further 22.2% refused to take part, resulting in contacts with 62.3% of 3844 potentially eligible contacts (n = 2394). Further attrition reduced the final sample to 1918 patients, which was 59% of eligible patients</p>

Interventions	<p>Intervention targeted patients</p> <p>Content of intervention: Revelation of physician incentives. Patients provided with two different disclosures of incentive payments to doctors tailored for health plan members of two different types of plan: a capitated plan (payment by capitation and mixed incentive bonus); and an open plan point of service (physicians paid by discounted fee for service and mixed incentive bonus). The disclosure contained information on the structure, direction and possible effects of the incentives in both plans (more versus less care). In the capitation plan intervention more emphasis was given to cost saving aspects of the plan. The description of the physician incentives emphasised more positive features (promoting health, eliminating unnecessary care). These were written in simple English and further reinforced by a subsequent phone call in which the details of the incentives of each plan were read out to subjects, their comprehension checked by a set of simple questions and any errors corrected and checked again</p> <p>Intervention (disclosure of incentives) took place four to six weeks after baseline measurements and final measurement occurred one month after the intervention</p> <p>Control group received no training.</p>	
Outcomes	<p>Trust as a primary outcome (Table 1).</p> <p>Baseline measurements: Trust, education, demographic measures and health status, knowledge of incentives, number of years with doctor, physician visit volume, prior disputes with and choice of physician or insurer</p> <p>Outcomes at final measurement (1 month post intervention) - Trust of physician, trust in insurer (using two previously validated scales, Hall 2002b and Zheng 2002)., knowledge of physician incentives, history of disputes with insurer</p>	
Funding	Study funded by Robert Wood Johnstone Foundation.	
Notes		
Risk of bias		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Equal number from each plan selected. Sequence generation by computer (information from author)
Allocation concealment (selection bias)	Unclear risk	No mention in text.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	No mention in text.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No mention in text.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Poorly described in text.

Selective reporting (reporting bias)	Low risk	Most outcomes reported.
Other bias	Unclear risk	<p>Protection against contamination: restricted the study to one person per household to avoid contamination</p> <p>Intention-to-treat analysis: Not appropriate.</p> <p>Potential for unit of analysis error for some outcomes?: Yes. Acknowledged and adjusted for. Used a mixed modelling technique. The regressions adjusted for baseline differences between the groups that were associated with trust scores as well as differences in the time of survey</p>

Hsu 2003

Methods	RCT, three arm - one control and two choice formats. Started November 1998, recruitment lasted 8 months
Participants	<p>Participants: 30+, from HMO and whose primary care physician (PCP) had retired</p> <p>Clinical Setting: HMO, USA.</p> <p>Characteristics of intervention providers: Research assistant: provision of web-based or telephone based provider-specific information</p> <p>Number of patients: 1090. Overall 10944 patients were eligible, and 5059 (46.2%) were linked. Of these 3384 were sampled but 1447 did not return surveys and 428 excluded for other reasons, therefore 2009 were randomised in the study and 1776 were used in analysis. Of these the average age was 57 and 55% were female</p>
Interventions	<p>Content of intervention: Control patients were told their PCP was retiring and that they had to seek out a new provider. Patients in both intervention arms could access information on the demographic and educational characteristics of specific PCPs and their clinical areas of interest and hobbies; Patients and PCPs completed a Patient-Provider Orientation Score which assessed preferences for shared decision making. In one arm patients were given a list of PCPs who matched their own views on shared decision making. They could also access information on their PCPs' preferences for shared decision making</p>
Outcomes	<p>Trust measured as secondary outcome.</p> <p>No baseline measurements made. The authors presented the results of both intervention groups combined in the paper as there were no significant differences in outcomes between the two intervention groups</p> <p>Outcomes measured at 12 months: Trust - assessed using a nine-item questionnaire with responses to each item scored on a five-point Likert scale, derived from previous instruments (Table 1).</p> <p>Other outcomes - experience of choosing PCP, satisfaction with PCP and health system. Perceptions of barriers to care access</p>

Hsu 2003 (Continued)

Funding	Robert Wood Johnston Foundation
Notes	Authors' conclusions: Several measures of trust improved in comparison with control, but not trust in HMO Additional results from the Krupat 2000 trial: trust and satisfaction increase in the guided choice intervention compared to the other two groups

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated randomisation.
Allocation concealment (selection bias)	Unclear risk	No mention in text.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Unblinded.
Blinding of outcome assessment (detection bias) All outcomes	High risk	Unblinded.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Response rate between intervention and control groups was 72% and 64% respectively
Selective reporting (reporting bias)	Unclear risk	Unclear in text.
Other bias	Unclear risk	Protection against contamination: Unlikely. Loss to follow-up in relation to completion of questionnaire

Nannenga 2009

Methods	2x2 cluster factorial design. A single centre study. Unit of randomisation: Doctor. Duration: April to July 2005
Participants	Setting: USA, Secondary Care. Speciality: Diabetes/Endocrinology All patients presenting with an initial consultation. Clinical setting: Private (Mayo Clinic), secondary care (endocrinology clinic) Types of patients: No age limits, clinical diagnosis of type 2 diabetes and were able (no hearing, visual, cognitive, translation problems) to provide informed consent. No reported contraindications for statins use and were available for follow-up at 3 months. 263 patients were assessed for eligibility with 98 randomised. For the excluded patients

	<p>139 did not meet the inclusion criteria and 26 refused to participate. Two patients lost to follow up - both in the researcher-delivered intervention group. Mean age 65, slight majority were male</p> <p>Characteristics of intervention providers: Endocrinologist and all initial consultations</p> <p>Number of patients at baseline: 52 allocated and received the intervention</p> <p>26 patients = decision aid was administered by provider during visit (* 5 clinicians allocated)</p> <p>26 patients = decision aid was administered by researcher prior to visit (* 6 clinicians allocated)</p> <p>Controls - 46, all followed-up.</p>
Interventions	<p>Content of intervention:</p> <p>Theoretical basis: The authors propose that observational studies have suggested that information sharing by the clinician is associated with increased levels of trust. They therefore posit that as decision aids are tools, among other purposes, to help clinicians share unbiased evidence-based information and uncertainty with patients that their use should improve levels of trust</p> <p>Intervention; Patients with type 2 diabetes were referred to a subspecialty diabetes clinic to use the Statin Choice decision aid or a patient pamphlet about dyslipidaemia, and then to receive these materials from either the clinician during the visit or a researcher prior to the visit</p> <p>Design and main results of the trial published elsewhere (Montori 2007).</p> <p>Experimental Intervention: Statin Choice decision aid*, a one-page document tailored to the individual patient including the patient's name, cardiovascular risk factors, and estimated cardiovascular risk. Benefits and downsides presented using natural frequencies and ordered ovals (e.g. after rows of green happy faces, red frowning faces denoted those, out of 100, who had undesirable events in 10 years of observation)</p> <p>Definition of trust: Trust is a fundamental feature of the patient-physician relationship that correlates with patient satisfaction, continuity of care, adherence to medical therapy, and other desirable practice metrics</p> <p>All encounters were videotaped and after the consultations participants undertook a 71-item survey</p> <p>Durations and timing - initial visit.</p> <p>Adherence - intervention group - 100% but one loss to follow up as did not complete survey. Control group (leaflet only) - 100%</p> <p><i>*information on aid provided by Weymiller 2007.</i></p>
Outcomes	<p>Trust measured as a secondary outcome</p> <p>No baseline measurements made. Outcomes measured immediately post-intervention</p> <p>Outcomes measured - Trust - TPS, 100 = total trust and 0 = no trust (Table 1).</p> <p>Other outcomes measured - knowledge questions and decisional conflict scale</p>
Funding	<p>Funded by the Mayo Clinic section of patient education and the American Diabetes Association</p>
Notes	<p>Key conclusion: Decisions aids do not significantly alter trust but may increase trust through improvements in the decision-making process and may enhance care</p> <p>Limitations to study: a small single-centre trial with trust as one of several secondary outcome measures. The mean trust score in the control group of 88.8, while high, was</p>

Nannenga 2009 (Continued)

similar to previous experiences with the TPS. Responses were s into perfect and non-perfect scores to enhance interpretation. The authors recognised that scores for trust could be lower, and the effect of the decision aid different among minority patients (who reportedly may have greater distrust of physicians), and patients with established relationships with their clinician (these were all first visits). Authors state that the study did not have a sizable proportion of eligible minority participants, but they did adjust analyses for travel distance

Strengths of study: rigorous design and conduct, and the planned and focused nature of the analyses. Authors state that to their knowledge, this is the first use of trust as an outcome in a decision aid trial

Information on study design and main results of trial: [Montori 2007](#), [Weymiller 2007](#).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer allocated randomisation and patients allocated to a 2x2 design giving four groups
Allocation concealment (selection bias)	Low risk	Allocation unknown to personnel enrolling.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Patients and personnel did not know objective of trial, but impossible to blind to intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Data analysts and statisticians blinded to allocations.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Little incomplete data.
Selective reporting (reporting bias)	Low risk	Little incomplete data.
Other bias	Unclear risk	Possible small risk of contamination. Some problems with small numbers.

Pearson 2006

Methods	RCT. Unit of randomisation: Patient. Duration: Recruitment December 2003, Surveyed 8 to 12 weeks later
Participants	Setting USA. Speciality: Primary care. Patients of two large medical groups - Harvard Vanguard medical associates and Health-care Partners medical group Types of patient - Patients eligible if over 25 and had been with the company for more than 1 year

	<p>Initial samples of 5000 patients at Harvard Vanguard Medical Associates in Boston were identified. Among these, 250 had incorrect addresses or were deceased. The response rate to the survey was 48.4% (1138/2352) among disclosure patients and 53.3% (1277/2398) among control patients.</p> <p>Initial samples of 3000 at HealthCare Partners Medical Group in Los Angeles were identified. Among these 130 patients had surveys returned as undeliverable. The mean age of the responders was 55, with 58% female. In Boston, 77% were white and in Los Angeles, 53% white (20% Hispanic). Non-responders were likely to be younger (mean age = 49) and male (52%). The Boston patients were also more highly educated, 70% attending college, than Los Angeles, 41% attending college</p> <p>Characteristics of intervention providers: Primary care physicians - they were made aware of intervention but were given no training or advice. Letters were sent to patients independently of the physicians by the company's Chief Medical Officer</p>
Interventions	<p>Content of intervention: Concern that incentives are causing a conflict of interests for doctors, hence many states make doctors declare these incentives. Some people argue that declaring these interests actually decreases trust between patients and doctors. This trial aimed to look at this question. The trialists disclosed details of compensation to patients at two large healthcare groups and assessed how this affected trust and loyalty. Databases were searched and random patients sent a single letter about payments. Postal survey 8 to 12 weeks later</p> <p>Trust was measured using a previously-used Likert scale asking the question "do you trust your doctor to put your health above that of their financial gain?"</p> <p>Control group - no letter sent.</p>
Outcomes	<p>Trust measured as a primary outcome</p> <p>No baseline measures. Outcomes measured at 8 to 12 weeks from baseline</p> <p>Boston: 48.4% (1138/2352) returned the survey in the intervention group, and 53.3% (1277/2398) in the control group</p> <p>LA: 36.8% (533/1449) returned the survey in the intervention group and 38.6% (549/2532) in the control group</p> <p>Main outcome: trust - 5-point Likert scale - previously validated (Table 1).</p> <p>Additional outcomes reported: Site-adjusted for age, sex, race, education and self-reported health</p>
Funding	The Greenwall Foundation, New York.
Notes	<p>Authors' key conclusions: Trust is unharmed by disclosure and loyalty strengthened</p> <p>Comments:</p> <p>Study performed in only 2 large medical groups and generalisability to smaller groups or to patients in other settings remains unclear. Response rates to the surveys were low; possible that higher response rates could have revealed a diminished influence of the disclosures on key outcomes</p> <p>The disclosure letters, while having a positive effect on understanding overall, left many patients unable to identify the basic method through which their physicians were compensated. Even among patients who remembered receiving a disclosure, more than 50% did not feel like they knew enough to be able to judge the possible influence of their physician's compensation on their health care. The study also showed that there were still many patients in Boston and Los Angeles who mistakenly believed their physicians</p>

	<p>were being paid through capitation or a bonus tied to year-end financial performance</p> <p>Intention-to-treat analysis: The main analyses of the study were framed to measure the effectiveness of the disclosures by comparing all patients who were sent the disclosures (intervention) with those who were not sent the disclosures (control). Parallel analyses to evaluate the maximal impact of the disclosure statements were performed comparing control patients with patients who were sent a disclosure and indicated that they remembered receiving it. Comparisons of the responders and non-responders to the survey based on T tests and Chi² tests. All other tests are Waldtype tests based on generalised estimating equations, which were used to control for clustering among patients sharing a PCP. Given the differences in disclosure letters and site population characteristics, analyses were stratified by site. Power calculations were not given. Potential for unit of analysis error for some outcomes: Univariate P values are from generalised estimating equations adjusted only for clustering by PCP. All other results described as “adjusted” in the text derive from multivariable generalised estimating equations, including variables for age, sex, race, education, and self-reported health</p>	
Risk of bias		
Bias	Authors’ judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Patients randomly allocated, methods not described.
Allocation concealment (selection bias)	Unclear risk	Not mentioned in text.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Not mentioned in text.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not mentioned in text.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	The response rate to the survey was 48.4% (1138/2352) among disclosure patients and 53.3% (1277/2398) among control patients
Selective reporting (reporting bias)	Low risk	All outcomes reported.
Other bias	Unclear risk	Protection against contamination: unknown.

Thom 1999

Methods	RCT which provided baseline measures and used within-group differences (measured before and after) as well as between-group differences (intervention versus control) for measures of trust and some other measures. Unit of randomisation: doctor Recruitment in 1992. Patients and physicians followed-up for six months
Participants	Clinical setting: Primary care practices, Stanford USA. Speciality: Volunteer primary care physicians with an interest in communication skills Types of patients: General patients > 18 yrs. Only those who had a prior visit and knew the index doctor were included. Patients recruited from these 20 practices by a researcher who approached them in the waiting room. Of 803 patients approached, 414 were eligible and enrolled in the study. Those continuing in the project were mainly white (70%), and had been with the doctor on average 27 months. The nature of the presenting complaint was not recorded; the presence of chronic conditions and general health was Numbers of patients followed up in intervention group: not stated (414 patients overall) Characteristics of intervention providers: Training of doctors was by two academic family practice physicians and a sociologist who had led focus groups on patient-physician trust. First, the authors surveyed doctors located in the geographic area around Stanford University who had expressed an interest in research. 206 of the 307 surveyed replied; 176 who responded remained in practice. These doctors were then asked if they had an interest in taking part in a study on doctor-patient communication, and 54 stated that they had such an interest. From that group, 20 doctors were willing to take part in the study on trust (11% of those eligible). Of these 20, 3 were female and 14 white, with 4.5 to 28 years in practice and most (70%) were in group practice Numbers of providers receiving intervention: 10 Numbers of providers in control group: 10
Interventions	Content of intervention: Training doctors to increase behaviours known to be associated with trust. The content of the training programme was derived from patient focus groups (Thom 1997), published literature on doctor-patient communication (Bertakis 1991; Epstein 1993; Quill 1989; Simpson 1991) and a modified version of the Bayer Institute for Health Care Communication Workshop (Bayer Institute 1995). The workshop focused on means of demonstrating: respect for the patient; clear addressing of patients' concerns; thoroughness in history taking and examination; negotiation of an agreed treatment plan; answering questions/explaining; and arranging follow-up access. Problem-based learning techniques (Sheline 1991) were used including brief didactic presentations, group discussion, role play, and viewing videotaped patient encounters. Duration and timing: A single one-day meeting Control group received no training.
Outcomes	Trust was measured as primary outcome. Outcomes were measured at baseline and six months Outcomes measured - Trust, satisfaction, humanistic behaviour, number of referrals, diagnostic tests, proportion of visits to study physician, number of patients remaining with physician and self-reported adherence
Funding	Funded by grants from the Picker/Commonwealth Fund and the Bayer Institute for Health Care Communication

Thom 1999 (Continued)

Notes	Measures used: Trust measured using a version of the Anderson and Dedrick 11-item trust scale (Anderson 1990), modified to be suitable for use in primary care (Table 1). Labelling on the scale was changed to yield a lower mean score. The new scale was psychometrically evaluated before use (Thom 1999). Satisfaction: Consumer Satisfaction Survey (Davis 1991). Humanistic behaviour: measured the physician's interpersonal behaviour using the Physician's Humanistic Behaviour Questionnaire (Weaver 1993).
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Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation generated by computer.
Allocation concealment (selection bias)	Unclear risk	Allocation concealed (information from author).
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Not mentioned in text.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessors blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Intention-to-treat analysis: Not appropriate (no dropouts). Potential for unit of analysis error for some outcomes?: Yes, but adjustments made
Selective reporting (reporting bias)	Low risk	All outcomes reported.
Other bias	Unclear risk	Protection against contamination: little potential for contamination

Thom 2006

Methods	Cluster RCT. Unit of randomisation: Practice. Study duration of six months; exact timings not mentioned.
Participants	Clinical setting: USA primary care. Private. Patients at one of four locations: academic centre, community-based primary care centre, rural family medicine residency program, inner-city family medicine residency program. Patients recruited by researcher. Must have been seen in last 12 months and have a diagnosis of diabetes or hypertension. Recruited via mail and follow-up phone call if required. Mainly mailed and patients given incentive for enrolling in trial. Letters sent in English and Chinese or English and Spanish depending on location. 86 physicians

	<p>contacted and 53 (62%) agreed to take part. The mean age was 39.2, 45% were female and 72% were white. 43 physicians (50%) spoke a second language, primarily Spanish. Non-participating physicians were more likely to be younger and more junior. 2837 patients were initially approached, 940 could not be contacted. 1219 were eligible and 671 enrolled. Of these about half completed all the surveys. Non-responders were more likely to be Asian (40% versus 18%) and not primary English speakers (54% versus 32%)</p> <p>Intervention patients: 247. Control patients: 182</p> <p>Intervention provided by research team based on model devised by one of the authors</p>
<p>Interventions</p>	<p>Content of intervention:</p> <p>Basis: Health disparities in the US and between European Americans and other racial/ethnic groups have been amply documented. Increasing the cultural competency of physicians and other healthcare providers has been suggested as one mechanism for reducing such disparities by improving the quality of care across racial/ethnic groups. The Federal Office of Minority Health has published guidelines that include cultural competency training for healthcare providers and the Accreditation Council on Graduate Medical Education has made cultural sensitivity a part of professional competency for physicians in training</p> <p>In the Study: Patients completed a baseline survey which included a measure of physician culturally-competent behaviours. Cultural competency training was then provided to physicians at two of the sites</p> <p>Cultural competency training: Training was divided into three modules corresponding to the three areas in the cultural-competency model. Modules could then be given either as a single half-day training session or as three separate sessions lasting 1 to 1.5 hours each. While there was a focus on patients with diabetes or hypertension, most of the content was designed to be applied to patients in general. Teaching techniques included didactic presentations, group discussion, role-playing with learners critique, group exercises, use of trigger tapes, and handouts. Instructors included the authors, two other physicians with expertise in cross-cultural care, and experts in training and use of interpreters. The concept of a cultural competency continuum was used across all three modules to emphasise working toward a goal of increasing cultural versatility, defined as “having a variety of skills to bridge to patients from different cultural backgrounds”. Post-training, learners were asked to rate the usefulness of the training they received on a 5-point Likert-type scale and overall educational content, relevance to practice, and reported that the training had increased their awareness of patients’ cultural beliefs, and increased their communication skills with patients as mean scores</p> <p>Patients’ feedback: Questionnaires were administered and returned by mail except for participants who asked to complete the questionnaire by phone. Participating patients were paid \$10 for returning the baseline questionnaire, and \$5 for each follow-up questionnaire. Follow-up questionnaires were sent two times</p> <p>Feedback was provided to each physician via written report with an interpretation of the aggregated patient-reported physician cultural competence scores from their patients. In addition to an overall score, scores were provided for each of the three areas: history taking, explaining, and partnering. Scores for each individual item were reported as well. Aggregated mean scores for other physicians within their practice group were provided for comparison. A cover letter accompanying the feedback offered interpretation of the scores and suggested behaviours that could help to improve scores. The physician was offered the opportunity to discuss one-on one the feedback results</p>

	Trust definition: Not stated. Control - no intervention. Adherence - both groups - 75% patients. 100% physicians	
Outcomes	Trust measured as a secondary outcome Outcomes measures at baseline and six months. Primary - The primary outcome at six months was change in the Patient-Reported Physician Cultural Competence (PRPCC) score Changes in Patient Trust measured using the 7 Likert-response items from the sub scale of the Primary Care Assessment Survey (Table 1). Other secondary measures. Satisfaction.	
Funding	Study funded by a California Endowment grant.	
Notes		
Risk of bias		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not stated in text.
Allocation concealment (selection bias)	Unclear risk	Not stated in text.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Not clear, but authors provided training.
Blinding of outcome assessment (detection bias) All outcomes	High risk	Unblinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Adjusted for.
Selective reporting (reporting bias)	Low risk	All outcomes reported.
Other bias	Unclear risk	Protection against contamination: Cluster randomised. Potential for unit of analysis error for some outcomes - not clear

Methods	<p>RCT. Unit of randomisation: Patient. Provided baseline measures and used within group differences (measured before and after) as well as between group differences (intervention versus control) for measures of trust and some other measures</p> <p>Three types of intervention tested.</p> <p>Start dates not mentioned.</p>
Participants	<p>Clinical setting: HMO, USA.</p> <p>Characteristics of patients: New enrollees (last 18 months) in a HMO, who did not have a designated physician. Of those offered, 75% (117/156) agreed an individual visit with a doctor alone and of these 57% (67/117) attended; 74% (131/177) agreed a visit with a doctor and educator and 58% (76/131) of those attended; 50% (264/528) agreed a group visit and 54% (143/264) of those attended. Therefore, data were available for 286 patients randomised to 3 intervention groups. Additionally, 278 patients were randomised to a control group. Young men were least likely to schedule a visit (40%) and older adults most likely (73%). Participants were 58% female, aged between 20 and 80, 72% white, 10% black, 10% Hispanic and 9% Asian. Most (more than 60%) were in self-assessed good or excellent health. 'Refusers' and those who did not attend had similar baseline characteristics to participants</p> <p>Numbers of patients followed up in intervention group: 67 (doctor visit), 76 (doctor + health educator), 143 (Group visit)</p> <p>Numbers of patients followed up in control group: 278.</p> <p>Characteristics of intervention provider: The doctor-only intervention was carried out by 20 doctors from the HMO. These doctors had a 1-hour orientation to the tools and goals of the visits. The doctor plus health educator intervention included doctors from the HMO as above with whom the patient was usually subsequently empanelled. The health educators were a registered nurse and two Health Educators (no specific training was mentioned for these). The physician and health educators who led the final intervention groups had received one day's training on the curriculum and videotaped feedback to improve their presentation and facilitation styles. These patients were eventually empanelled with other doctors</p>
Interventions	<p>Content of intervention: Compared the impact of three different types of induction visit for new patients of an HMO against no intervention. The interventions were: individual visit with a physician; physician visit followed by a visit with a health educator, or a group visit of eight new members led by a physician and a health educator. Each included a brief Health Risk Appraisal, review with a clinician and referral for appropriate screening and immunisations. The visit with the doctor lasted 15 minutes. The doctors offering this intervention had taken part in one hour's training on the tools and goals of the visits. The doctor and health educator visits provided an additional 15-minute visit with the health educator after seeing the doctor. This visit included discussion of lifestyle issues and creation of a 'personalised prevention plan' and also a review of the contents of a Healthwise handbook which all members received in the post (a booklet which contains lifestyle advice, and advice about self management of medical problems). The third intervention comprised six age- and gender-specific 'Group Visits' which followed a semi-structured curriculum on the Healthwise handbook, training on making the most of medical visits including shared decision making, and age- and gender-specific advice on important screening, immunisations, and lifestyle</p> <p>Duration and timing: 15 minutes (doctor alone); 15 minutes with doctor and 15 minutes with health educator; 90 minute group visit</p>

Thompson 2001 (Continued)

	Control group received no contact.	
Outcomes	<p>Trust measured as a secondary outcome.</p> <p>Baseline measurements made: Trust, education, demographic measures and health status.</p> <p>Other parameters included knowledge tests, perceived healthy lifestyle</p> <p>Trust in 'health professionals' of HMO, satisfaction, knowledge of appropriate screening and immunisation schedules</p> <p>Measures used: A global statement rated on a 10-point scale to measure trust that the physicians of their HMO had their best health interests as their top priority. It was unclear if there was psychometric testing or validation of this instrument</p> <p>A single, apparently unclearly validated global statement rated on a 10-point scale to measure satisfaction with the HMO</p> <p>Follow-up measurements were made at 6 months.</p>	
Funding	Not mentioned.	
Notes		
<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not mentioned in text.
Allocation concealment (selection bias)	Unclear risk	Not mentioned in text.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Unblinded due to nature of study.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not mentioned in text.
Incomplete outcome data (attrition bias) All outcomes	High risk	Intention-to-treat analysis: not carried out. Potential for unit of analysis error for some outcomes? Yes, acknowledged but not allowed for
Selective reporting (reporting bias)	Low risk	All outcomes reported.
Other bias	Unclear risk	Protection against contamination: Unclear

Methods	<p>Study design: Single-blind, randomised, controlled, parallel-group study. Provided baseline measures. Unit of randomisation: Doctor</p> <p>One intervention.</p> <p>Start dates not mentioned. Results measured after one month.</p>
Participants	<p>Clinical setting: Secondary care, USA, three centres.</p> <p>Participants: 48 oncologists, 264 patients with advanced cancer. All patients spoke English</p> <p>Oncologists: Higher percentage of control oncologists were white 92% versus 67%; mean age 48.8 (9.2) intervention versus 49.7 (6.7) control; gender: intervention 79% male versus control 83% male. 74 oncologists consented and 48 randomly chosen (24 intervention and 24 control), then balanced randomisation by site, sex and speciality.</p> <p>Characteristics of patients: selected by oncologists or mid-level provider as being in the category "would not be surprised if they died or were admitted to the intensive care unit (ICU) within one year". Age: mean intervention 62.2, control 59.9. Gender: 38% male intervention, 47% male control; Ethnicity: 82% white intervention, 85% white control</p> <p>Intervention patients: 139 consented, 118 provided baseline and posttest data</p> <p>Control patients: 134 consented, 98 provided baseline and post-test data</p> <p>Characteristics of participants providing interventions: little specific information given</p>
Interventions	<p>A lecture and physician-specific interactive CD-ROM about responding to patients' negative emotions. Designed because physicians can miss vital cues about behaviour.</p> <p>Intervention based in the social cognitive theory model and a barriers model</p> <p>All oncologists has a 1 hour lecture about communication skills. The intervention group had a CD-ROM that was personally tailored using baseline audio recordings. CD-ROM contained 5 modules which would take 10 to 15 minutes to complete</p> <p>Lecture was delivered by one of the investigators and the CD-ROM by a psychologist.</p> <p>The CD-ROM was delivered a year after the initial lecture as time was required to make it physician-specific</p>
Outcomes	<p>Trust measured as a secondary outcome.</p> <p>Baseline measurements made: Oncologists: baseline demographics including age, gender, race, location, oncological speciality, years since fellowship, mean patient care hours per week and orientation in medicine, i.e. socio-emotional or technical. Patients: age, gender, race, economic security and length of relationship with physician</p> <p>Post-visit data collected one month after CD-ROM sent out. One week after post-intervention recording made patients surveyed for secondary outcomes. Primary outcome - oncologist responses to empathic opportunities (number of emphatic statements, continued response to empathic opportunity)</p> <p>Trust: patients were asked 11 items about their oncologist. Used the TPS. See Thom 1999 for definition of trust in this score. Score given as average of patient responses to 11 item score 1 to 5 in each question, max 55 (Table 1).</p> <p>Other secondary outcomes included perceived empathy scale, therapeutic alliance scale, perceived knowledge of patient, perceived belief that oncologist cares about patient, perceived belief that the oncologist understood the patient as a whole</p>
Funding	<p>Funded by the National Cancer Institute which had no role in the design, conduct or analysis of study</p>

Notes	Further information in Skinner 2009 .	
<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Conducted by statistician.
Allocation concealment (selection bias)	Unclear risk	Not mentioned in text.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not possible to blind oncologists. Oncologists' randomisation status only known by principal investigators and project coordinator
Blinding of outcome assessment (detection bias) All outcomes	High risk	Randomisation status known to investigators.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Patient follow up rate 118/132(89%) in intervention group and 98/121 (81%) in control group
Selective reporting (reporting bias)	Low risk	All results given.
Other bias	Low risk	Limited contamination risk.

CHCC - Co-operative Health-care Clinics

HMO - Health Maintenance Organisation

PCAT - Primary Care Assessment Tool

PCP - Primary Care Physician

RCT - Randomised Controlled Trial

TPS - Trust in Physician Scale

Characteristics of excluded studies [ordered by study ID]

Study	Reason for exclusion
Barkin 2003	Interrupted time series had insufficient data collection points
Campbell 2005	Controlled before and after study had insufficient sites.
Chung 2012	Did not use a validated measure of trust.

(Continued)

Levison 2005	Inappropriate study design - insufficient data points.
Mazor 2004	Inappropriate study design - hypothetical situations.
Mazor 2005	Inappropriate study design - hypothetical situations.
Meloche 2003	Poorly described intervention, no validated measure of trust
Saha 2011	Used videotapes of consultations representing different levels of patient-centred communication to explore how communication style affected trust in physician. This was excluded because although the presentation of the videotapes was randomised we considered to it be essentially an observational study
Van Voorhees 2009	Insufficient data - no baseline. Did not use a validated measure of trust
Wu 2009	Inappropriate study design - hypothetical situations.

DATA AND ANALYSES

This review has no analyses.

ADDITIONAL TABLES

Table 1. Trust measures

Study	Measure of trust used	Domains considered	Population in which validated	Range of Score	Cronbach alpha =	Timing of Assessment in this study
Clancy 2003	Trust in Physician Scale (TPS) (Anderson 1990) (modified 10 items rather than 11), The statement on confidentiality was removed	<ul style="list-style-type: none"> • physician dependability • confidence in physician knowledge and skills • confidentiality and reliability of information received from the physician. Confidentiality part of the domain in this study may be compromised 	Original validation of full scale was in patients from N. Carolina, USA veterans program in secondary care	10-item Likert scale 1 to 5 Range 5 to 50	Original scale 0.9 but no validation available for reduced scale	3 months and 6 months after intervention
Clancy 2007	Trust in Physician Scale Anderson 1990 . Not stated if it was the full or reduced scale in this study presumed to be the reduced version as in Clancy 2003	<ul style="list-style-type: none"> • physician dependability • confidence in physician knowledge and skills • confidentiality and reliability of information received from the physician. but missing confidentiality part of the domain 	Original validation of full scale was in patients from N. Carolina, USA veterans program in secondary care	Unclear, presumed to be as in Clancy 2003 Range 5 to 50	Unclear, presumed same as Clancy 2003 . Original scale 0.9 but no validation available for reduced scale	6 and 12 months after intervention
Hall 2002	Wake Forest Physician Trust Scale Hall 2002	<ul style="list-style-type: none"> • fidelity, which is caring and advocating for the patient's 	Questions piloted in 297 male and female adults from	10-item 5-point Likert scale Range 10 to 50	0.93	One month after intervention

Table 1. Trust measures (Continued)

		<p>interests or welfare</p> <ul style="list-style-type: none"> • competence, <ul style="list-style-type: none"> • honesty • confidentiality <ul style="list-style-type: none"> • global trust 	<p>various community groups representing a range of socioeconomic backgrounds. Then 959 from a national random telephone dialling survey and a second group of 1211 members of an HMO in North Carolina, who were at least 21 years old, had been with the HMO at least 2 years, and had made at least two visits to their primary care provider</p>			
Hsu 2003	<p>6 items from the Trust in Physician Scale Anderson 1990, Two items which were developed as part of that scale but not included (whether the primary care physician(PCP) knew the person well, confidence that PCP always provided the best possible medical care) and 1 which was new (whether the PCP shared similar values with respect to health care)</p>	<ul style="list-style-type: none"> • physician dependability • confidence in physician knowledge and skills • confidentiality and reliability of information received from the physician 	<p>Validation of first 6 items was carried out by Thom and colleagues in primary care in 1999. 414 adult patients from 20 community-based, primary care practices in the USA. Unclear how the additional three items were validated</p>	<p>9-item Likert Scale 1 to 5; 1= totally disagree to 5 = totally agree Range 5 to 45</p>	<p>None for the new scale</p>	<p>1 year after intervention</p>

Table 1. Trust measures (Continued)

<p>Nannenga 2009</p>	<p>Trust in Physician Scale. Anderson 1990 (as modified by Thom 1999 below)</p>	<ul style="list-style-type: none"> • physician dependability • confidence in physician knowledge and skills • confidentiality and reliability of information received from the physician 	<p>Original validation of full scale was in patients from N. Carolina, USA veterans program in secondary care. Further validation was carried out by Thom and colleagues 1999 . In adult 414 patients from 20 community-based, primary care practices in the USA</p>	<p>11-item 5-point Likert scale. Transformed to 0 to 100 point scale</p>	<p>0.89</p>	<p>Immediately following encounter</p>
<p>Pearson 2006</p>	<p>Single item question based on previous research in Levison 2005</p>	<p>Trust in primary care physician to put health and well-being above costs</p>	<p>Conducted as part of the General Social Survey (GSS) , a biannual national survey conducted by the US National Opinion 2765 interviews</p>	<p>Single item 5-point Likert scale from “completely” to “not at all.” Results were expressed in terms of percentage of patients who completely or mostly agree with the statement that they trust the primary care physician to put health and well-being above costs</p>	<p>Not stated</p>	<p>8 to 12 weeks after intervention</p>
<p>Thom 1999</p>	<p>Based on Trust in Physician Scale (Anderson 1990) . One question was modified slightly to be appropriate for primary care setting. Also scale labelling changed slightly as in pri-</p>	<ul style="list-style-type: none"> • physician dependability • confidence in physician knowledge and skills • confidentiality and reliability of information received from the physician 	<p>Original validation of full scale was in patients from N. Carolina, USA veterans program in secondary care Further validation was carried out by Thom and colleagues 1999.</p>	<p>11-item 5-point Likert scale. Transformed to 0 to 100 point scale</p>	<p>0.89 in the Thom 1999 validation in primary care 0.9 in original validation</p>	<p>At one and six months</p>

Table 1. Trust measures (Continued)

	<p>mary care setting the usual labels resulted in very high scores. This was tested in 173 patients and shown to result in a slightly lower score than usual wording</p>		<p>In adult 414 patients from 20 community-based, primary care practices in the USA</p>			
<p>Thom 2006</p>	<p>Trust subscale of The Primary Care Assessment Survey (PCAS). [MB1] Although there are 8 items in the full subscale only 7 were used as the 8th ('All things considered, how much do you trust your doctor?') was on a 10 point scale which was thought might confuse the participants</p>	<p>Single trust domain was one of seven domains in the full PCAS</p>	<p>Adults employed by the Commonwealth of Massachusetts and enrolled in any of 12 health plans offered to commonwealth employees</p>	<p>7-item 5-point Likert scale, 5 to 35 but was transformed to 0 to 100</p>	<p>0.86 (original scale)</p>	<p>After first consultation after intervention. Between one and six months</p>
<p>Thompson 2001</p>	<p>Do you trust that the health care professionals at Kaiser have your best health interests as their top priority?</p>	<p>Not stated</p>	<p>Not clear. Authors contend that 'Similar 10-point ratings for knowledge and self-efficacy have proven to have stable test-retest reliability'</p>	<p>10-point Likert scale</p>	<p>Not stated</p>	<p>6 months after intervention</p>
<p>Tulsky 2011</p>	<p>Trust in Physician Scale. Anderson 1990</p>	<ul style="list-style-type: none"> • physician dependability • confidence in physician knowledge and skills • confidentiality and reliability of 	<p>Original validation of full scale was in patients from N. Carolina, USA veterans program in secondary care. Further validation was car-</p>	<p>11-item, 5-point Likert scale. Score range 5 to 55</p>	<p>0.89</p>	<p>Between five and six weeks post intervention</p>

Table 1. Trust measures (Continued)

		information received from the physician	ried out by Thom and colleagues 1999. In adult 414 patients from 20 community-based, primary care practices in the USA			
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Table 2. Training physicians in trust building behaviour: Thom 1999

Outcome	Baseline		Post intervention		Mean difference	P
	Intervention	Control	Intervention	Control		
Mean trust scores	74.0	75.2	74.4	76.2	-0.06	NS
Mean patient satisfaction score	78.2	79.1	76.1	76.5	0.5	NS
Mean humanness score	81.9	83.0	81.8	79.1	3.8	NS
Mean physician satisfaction	68.8	66.0	68.5	68.0	-2.3	NS

Table 3. Cultural competency training: Thom 2006

Outcome	Training and feedback; mean change from baseline (standard deviation)	Feedback only; mean change from baseline (standard deviation)	Mean difference	95% CI	P value
PRPCC* score	3.66 (17.2)	1.78 (19.2)	1.88	-5.35 to 1.59	NS
Satisfaction score	-0.73 (17.6)	-0.21 (17.8)	-0.52	-2.88 to 3.92	NS
Trust score	1.93 (8.6)	2.54 (15.6)	-0.61	-1.71 to 2.93	NS
Weight (pounds)	-2.46 (17.7)	-0.66 (9.4)	-1.8	-1.03 to 4.53	NS
Systolic blood pressure	1.69 (17.0)	0.07 (15.6)	1.62	-4.57 to 1.53	NS

Table 3. Cultural competency training: Thom 2006 (Continued)

HBA1c	0.02 (0.8)	0.07 (1.69)	-0.05	-0.19 to 0.29	NS
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PRPCC - Patient-reported physician cultural competence

Table 4. Empathy training for oncologists: Tulsky 2011

Outcome	Effect measure	95% CI	P value
	Rate ratio		
*Number of empathic statements	1.9	1.1 to 3.3	0.024
	Mean difference between intervention versus control		
**Trust (range 11 to 55)	0.1	0.0 to 0.2	0.036
Empathy scale (range 10 to 100)	0.2	0.0 to 0.4	0.058
Therapeutic alliance score (range 10 to 100)	1.9	-1.5 to 5.2	0.27
Perceived knowledge of patient (range 4 to 24)	0.1	0.1 to 0.4	0.28

*empathic statements, defined as NURSE (name, understand, respect, support, explore) statements used by the physician

** Anderson 1990

Table 5. Health and loyalty promotion visits: Thompson 2001

Outcome	Doctor only (mean difference and 95% CI)	Doctor and health educator (mean difference from control and 95% CI)	Group visit (mean difference from control and 95% CI)
Trust in physician (rated from 1 (do not trust) to 10 (definitely trust))	0.6 (-0.07 to 1.26)	0.8 (0.17 to 1.14)	1.6 (1.22 to 2.18)
Satisfaction with health plan (rated 1 (extremely dissatisfied) to 10 (extremely satisfied))	0.4 (-0.26 to 1.07)	0.7 (0.11 to 1.29)	1.2 (0.76 to 1.640)
Perceived knowledge of screening tests: score out of 10.	1.4 (0.57 to 2.2)	2.0 (1.2 to 2.7)	2.9 (2.3 to 3.5)

Table 5. Health and loyalty promotion visits: Thompson 2001 (Continued)

Mean score on screening test knowledge. Proportion of answers correct	0.09 (0.02 to 0.16)	0.17 (0.12 to 0.22)	0.18 (0.13 to 0.23)
Perceived knowledge of recommended immunisations (rated 1 (not at all sure) to 10 (very sure))	1.8 (1.02 to 2.58)	1.9 (1.12 to 2.68)	2.3 (1.77 to 2.83)
Perceived knowledge of lifestyle behaviours (rated 1 not at all sure to 10 very sure)	1.8 (1.1 to 2.5)	1.9 (1.3 to 2.6)	2.0 (1.5 to 2.5)
Perceived healthy lifestyle (rated 1 (not doing anything I should be healthy and prevent disease) to 10 (doing everything I should))	0 (-0.61 to 0.60)	0.1 (-0.47 to 0.70)	0.4 (-0.03 to 0.83)
Per cent likely to stay with plan	10 (-6 to 22)	18 (4 to 28)	26 (17 to 33)
Strongly agree with plan guidelines	17(0.6 to 30)	21 (6 to 34)	28 (16 to 38)
Familiarity with health plan	13 (-2 to 25)	9 (-6 to 22)	27 (17 to 35)

Table 6. Group visits for uninsured diabetic patients: Clancy 2003

Trust in Physician scale							Mean difference at 6 months	P value
Question	Control Group			Intervention Group				
	Baseline	3 months	6 Months	Baseline	3 months	6 months		
1 (Does not care for me as a person)	1.08	0.93	0.83	0.88	0.91	0.88	0.05	0.02*
2 (Considerate of my needs)	2.15	2.09	2.02	1.95	2.20	2.26	0.24	
3 (Is trustworthy)	2.18	2.14	2.02	2.08	2.24	2.27	0.25	

Table 6. Group visits for uninsured diabetic patients: Clancy 2003 (Continued)

4 (If s/he tells me something it must be true)	2.07	1.98	1.94	1.89	2.04	2.11	0.17
5 (I sometimes distrust my health provider's opinion)	1.44	1.34	1.21	1.2	1.11	1.15	0.06
6 (I trust health provider's judgement)	2.20	2.09	2.03	2.05	2.2	2.24	0.21
7 (I trust my health provider to put my problems first)	2.18	2.2	2.05	2.08	2.23	2.27	0.25
8 (My health provider is a real expert)	2.10	2.06	2.00	2.01	2.17	2.18	0.18
9 (I trust my health provider to tell me if a mistake is made)	2.08	2.12	1.99	2.06	2.21	2.18	0.19
10 (On a scale of 1 to 5 (1 = poor) the care I receive is)	2.30	2.30	2.24	2.25	2.35	2.37	0.13

* data not provided for individual results, total scores not provided.

Table 7. Decision aid for statins: Nannenga 2009

How much do you trust your doctor to:	Mean difference compared with control (95% CI)
Always tell you the truth?	1.5 (-2.2 to 5.1)
Provide you with accurate, up-to-date medical information	0.3 (-4.2 to 4.8)
Make excellent medical judgements on your behalf	-1.2 (-5.8 to 3.3)
Do everything medically that should be carried out in order to ensure the best possible results	-0.3 (-4.4 to 3.9)
Tell you when you could benefit from seeing a specialist	3.6 (-1.8 to 9.1)
Tell you if a mistake was made about your treatment	10.7 (2.0 to 19.5)
Put your medical needs above all other considerations, including cost	2.0 (-6.6 to 10.6)
Listen well so he/she understands your needs and concerns	9.2 (3.3 to 15.0)
Never pretend to know things when he/she is not sure	6.1 (-1.0 to 13.2)
Overall	3.1 (-1.0 to 7.2)

Response options were: 1 = completely; 2 = mostly; 3 = somewhat; 4 = a little; 5 = not at all.

Table 8. Disclosure of financial incentives: Pearson 2006

	Control patients	Intervention patients mailed a disclosure	Mean difference
Boston Group			
Trust in Primary Care Physician to put health and well-being above costs	84.9	83.9	-1.0 (P = 0.71)
Feel loyal to medical group and unlikely to switch groups in the next couple of years	70.2	73.4	3.4 (P = 0.03)
Los Angeles Group			
Trust in Primary Care Physician to put health and well-being above costs	74.8	78.6	3.8 (P = 0.18)

Table 8. Disclosure of financial incentives: Pearson 2006 (Continued)

Feel loyal to medical group and unlikely to switch groups in the next couple of years	66.9	74.1	7.2 (P = 0.08)
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Table 9. Primary care provider and Health Maintenance Organisation: Hsu 2003

	Intervention	Control	Mean difference	P values
Patient trust in the PCP				
Patient always follows advice	77.1	69.3	7.8	0.03
PCP provides best medical care	77.3	70.2	7.1	0.04
Patient and PCP think in the same way	61.6	51.7	9.9	0.02
Perception that PCP is well-qualified	82.6	74.9	7.7	0.02
Perception that PCP knows me well	39.1	24.6	14.5	< 0.01
Patient trusts PCP judgement	80.8	78.5	2.3	0.47
PCP is considerate of patient needs	76.5	74.9	1.6	0.64
PCP places patient needs above all else	71.4	67.2	4.2	0.27
PCP would reveal mistakes	68.1	65.6	2.5	0.52
Patient trust in the HMO				
HMO connects patients with best PCP	74.5	76.1	-1.6	0.64
HMO places patients needs above all else	68.1	68.5	-0.4	0.92
Patient perceptions of barriers to care				

Table 9. Primary care provider and Health Maintenance Organisation: Hsu 2003 (Continued)

Perceived access to specialist	76.4	65.9	10.5	0.01
Perceived access to medications	80.8	72.7	8.1	0.02
Perceived access to medical tests	78.7	72.6	6.1	0.09

PCP - primary care provider

HMO - Health Maintenance Organisation

APPENDICES

Appendix I. MEDLINE (Ovid) search strategy

- 1.randomized controlled trial.pt.
- 2.controlled clinical trial.pt.
- 3.randomized controlled trials.sh.
- 4.random allocation.sh.
- 5.double blind method.sh.
- 6.single-blind method.sh.
- 7.1 or 2 or 3 or 4 or 5 or 6
- 8.(animal not human).sh.
- 9.7 not 8
- 10.clinical trial.pt.
- 11.exp clinical trials/
- 12.(clin\$ adj25 trial\$).ti,ab.
- 13.((singl\$ or doubl\$ or trebl\$ or tripl\$) adj25 (blind\$ or mask\$)).ti,ab.
- 14.placebos.sh.
- 15.placebo\$.ti,ab.
- 16.random\$.ti,ab.
- 17.research design.sh.
- 18.10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
- 19.18 not 8
- 20.19 not 9
- 21.Intervention Studies/
- 22.experiment\$.tw.
- 23.(time adj series).tw.
- 24.(pre test or pretest or (post test or posttest)).tw.
- 25.impact.tw.
- 26.intervention\$.tw.
- 27.chang\$.tw.
- 28.comparative study.sh.
- 29.exp evaluation studies/

- 30.case control studies/
- 31.retrospective studies/
- 32.cohort studies/
- 33.longitudinal studies
- 34.follow up studies.sh.
- 35.prospective studies.sh.
- 36.(control\$ or prospectiv\$).ti,ab.
- 37.or/21-36
- 38.37 not 8
- 39.37 not (9 or 20)
- 40.9 or 20 or 39
- 41.(mistrust\$ or distrust\$ or entrust\$ or trust\$).mp. [mp=title, abstract, cas registry/ec number word, mesh subject heading]
- 42.40 and 41
- 43.exp Health Personnel/
- 44.exp Patient Care Management/
- 45.exp Physician-Patient Relations/
- 46.exp Attitude to health/
- 47.exp Consumer Satisfaction/
- 48.or/43-47
- 49.42 and 48

Appendix 2. MEDLINE (OvidSP) search strategy - Update

1. trust/
2. (mistrust* or distrust* or entrust* or trust*).tw.
3. (confidence in adj5 (physician* or doctor* or gp or gps or general practi* or surgeon* or hospitalist* or psychiatrist* or medical)).tw.
4. or/1-3
5. exp physicians/
6. exp medical staff/
7. faculty, medical/
8. (physician* or doctor* or gp or gps or general practi* or surgeon* or hospitalist* or psychiatrist*).tw.
9. (medical adj (practi* or staff or personnel or profession* or organi#ation*)).tw.
10. physician's role/
11. physician patient relations/
12. physician's practice patterns/
13. (therapeutic* adj (relationship* or alliance*)).tw.
14. physician incentive plans/
15. or/5-14
16. 4 and 15
17. randomized controlled trial.pt.
18. controlled clinical trial.pt.
19. random*.tw.
20. placebo*.tw.
21. trial.tw.
22. groups.ab.
23. clinical trial.pt.
24. evaluation studies.pt.
25. research design/
26. follow up studies/
27. prospective studies/
28. cross over studies/
29. comparative study.pt.

30. (experiment* or intervention*).tw.
31. (pre test or pretest or post test or posttest).tw.
32. (preintervention or postintervention).tw.
33. time series.tw.
34. (cross over or crossover or factorial* or latin square).tw.
35. (assign* or allocat* or volunteer*).tw.
36. (control* or compar* or prospectiv*).tw.
37. (impact* or effect? or chang* or evaluat*).tw.
38. or/17-37
39. exp animals/ not humans.sh.
40. 38 not 39
41. 16 and 40
42. limit 41 to yr="2003 - Current"

Appendix 3. CENTRAL search strategy - update

#1	*trust*:kw,ti,ab in Clinical Trials
#2	credibility:kw,ti in Clinical Trials
#3	confidence-in near/5 (doctor or physician or gp or gps or general-practi* or specialist or surgeon or psychiatrist or clinician) in Clinical Trials
#4	(#1 OR #2 OR #3)
#5	MeSH descriptor Physicians explode all trees
#6	MeSH descriptor Medical Staff explode all trees
#7	MeSH descriptor Faculty, Medical, this term only
#8	(physician or doctor or gp or gps or general-practi* or surgeon or specialist or hospitalist or psychiatrist or psychotherapist or clinician or pediatrician or geriatrician or gerontologist or gynecologist or gynaecologist):kw,ti,ab in Clinical Trials
#9	medical next (practi* or staff or personnel or profession* or organi*ation*) in Clinical Trials
#10	professional next (patient or family) in Clinical Trials
#11	((therapeutic* or working) next alliance) or therapeutic-relation* in Clinical Trials
#12	(#5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11)
#13	(#4 AND #12)

Appendix 4. EMBASE search strategy - update

1. trust/
2. (mistrust* or distrust* or entrust* or trust*).tw.
3. (confidence in adj5 (physician* or doctor* or gp or gps or general practi* or surgeon* or hospitalist* or psychiatrist* or clinician* or medical)).tw.
4. or/1-3
5. exp physician/
6. exp medical personnel/
7. (physician* or doctor* or gp or gps or general practi* or surgeon* or hospitalist* or psychiatrist* or clinician*).tw.
8. (medical adj (practi* or staff or personnel or profession* or organi#ation*)).tw.
9. doctor patient relation/
10. (therapeutic* adj (relationship* or alliance*)).tw.
11. or/5-10
12. 4 and 11
13. randomized controlled trial/
14. controlled clinical trial/
15. single blind procedure/ or double blind procedure/
16. crossover procedure/
17. random*.tw.
18. trial.tw.
19. placebo*.tw.
20. ((singl* or doubl*) adj (blind* or mask*)).tw.
21. (experiment* or intervention*).tw.
22. (pre test or pretest or post test or posttest).tw.
23. (preintervention or postintervention).tw.
24. (cross over or crossover or factorial* or latin square).tw.
25. (assign* or allocat* or volunteer*).tw.
26. (control* or compar* or prospectiv*).tw.
27. (impact* or effect? or chang* or evaluat*).tw.
28. time series.tw.
29. or/13-28
30. nonhuman/ not (human/ and nonhuman/)
31. 29 not 30
32. 12 and 31
33. limit 32 to yr="2003-Current"

Appendix 5. PsycINFO search strategy - update

1. "trust (social behavior)"/
2. credibility/
3. faith/
4. (mistrust* or distrust* or entrust* or trust*).ti,ab,id.
5. (confidence in adj5 (physician* or doctor* or gp or gps or general practi* or surgeon* or hospitalist* or psychiatrist* or psychotherapist* or clinician* or medical)).ti,ab,id.
6. or/1-5
7. exp physicians/
8. (physician* or doctor* or gp or gps or general practi* or surgeon* or hospitalist* or psychiatrist* or psychotherapist* or clinician*).ti,ab,id.
9. medical personnel/
10. (medical adj (practi* or staff or personnel or profession* or organi#ation*)).ti,ab,id.
11. clinicians/
12. exp psychotherapists/

13. exp therapeutic processes/
14. therapeutic alliance/
15. (((therapeutic* or working) adj alliance) or therapeutic relation*).ti,ab,id.
16. or/7-15
17. 6 and 16
18. random*.ti,ab,hw,id.
19. (experiment* or intervention*).ti,ab,hw,id.
20. trial*.ti,ab,hw,id.
21. placebo*.ti,ab,hw,id.
22. groups.ab.
23. ((singl* or doubl* or trebl* or tripl*) and (blind* or mask*)).ti,ab,hw,id.
24. (pre test or pretest or post test or posttest).ti,ab,hw,id.
25. (preintervention or postintervention).ti,ab,hw,id.
26. (cross over or crossover or factorial* or latin square).ti,ab,hw,id.
27. (assign* or allocat* or volunteer*).ti,ab,hw,id.
28. (control* or compar* or prospectiv*).ti,ab,hw,id.
29. (impact* or effect? or chang* or evaluat*).ti,ab,hw,id.
30. time series.ti,ab,hw,id.
31. exp experimental design/
32. ("0430" or "0450" or "0451" or "1800" or "2000").md.
33. or/18-32
34. animal.po.
35. 33 not 34
36. 17 and 35
37. limit 36 to yr="2003-current"

Appendix 6. CINAHL search strategy - update

#	Query	Limiters/Expanders
S37	s36	Limiters - Exclude MEDLINE records Search modes - Boolean/Phrase
S36	s20 and s35	Search modes - Boolean/Phrase
S35	S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32 or S33 or S34	Search modes - Boolean/Phrase
S34	AB time series or TI time series	Search modes - Boolean/Phrase
S33	AB (pre test or pretest or post test or posttest or preintervention or postintervention) or TI (pre test or pretest or post test or posttest or preintervention or postintervention)	Search modes - Boolean/Phrase
S32	TI (singl* or doubl* or tripl* or trebl*) and TI (blind* or mask*)	Search modes - Boolean/Phrase
S31	AB (singl* or doubl* or tripl* or trebl*) and AB (blind* or mask*)	Search modes - Boolean/Phrase

(Continued)

S30	AB (random* or trial or groups or placebo* or assign* or allocat* or volunteer* or factorial* or experiment* or control* or compar* or intervention* or chang* or evaluat* or impact* or effect?) or TI (random* or trial or groups or placebo* or assign* or allocat* or volunteer* or factorial* or experiment* or control* or compar* or intervention* or chang* or evaluat* or impact* or effect?)	Search modes - Boolean/Phrase
S29	PT Clinical Trial	Search modes - Boolean/Phrase
S28	MH Quasi-Experimental Studies+	Search modes - Boolean/Phrase
S27	MH Quantitative Studies	Search modes - Boolean/Phrase
S26	MH Placebos	Search modes - Boolean/Phrase
S25	MH Crossover Design	Search modes - Boolean/Phrase
S24	MH Comparative Studies	Search modes - Boolean/Phrase
S23	MH Random Assignment	Search modes - Boolean/Phrase
S22	MH Experimental Studies+	Search modes - Boolean/Phrase
S21	randomi?ed controlled trial*	Search modes - Boolean/Phrase
S20	s5 and s19	Search modes - Boolean/Phrase
S19	s6 or s7 or s8 or s9 or s10 or s11 or s12 or s13 or s14 or s15 or s16 or s17 or s18	Search modes - Boolean/Phrase
S18	MH physician incentive plans	Search modes - Boolean/Phrase
S17	working alliance	Search modes - Boolean/Phrase
S16	therapeutic relationship*	Search modes - Boolean/Phrase
S15	therapeutic alliance	Search modes - Boolean/Phrase
S14	MH professional-family relations	Search modes - Boolean/Phrase
S13	MH physician-patient relations	Search modes - Boolean/Phrase
S12	MH physician's role	Search modes - Boolean/Phrase
S11	medical practi* or medical staff or medical personnel or medical profession* or medical organi?ation*	Search modes - Boolean/Phrase

(Continued)

S10	AB (physician* or doctor* or gp or gps or general practi* or surgeon* or hospitalist* or psychiatrist* or clinician* or pediatrician* or geriatrician*)	Search modes - Boolean/Phrase
S9	TI (physician* or doctor* or gp or gps or general practi* or surgeon* or hospitalist* or psychiatrist* or clinician* or pediatrician* or geriatrician*)	Search modes - Boolean/Phrase
S8	MH faculty, medical	Search modes - Boolean/Phrase
S7	MH medical staff+	Search modes - Boolean/Phrase
S6	MH physicians+	Search modes - Boolean/Phrase
S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase
S4	(confidence W5 doctor*) or (confidence W5 physician*) or (confidence W5 gp) or (confidence W5 gps) or (confidence W5 general practi*) or (confidence W5 surgeon*) or (confidence W5 hospitalist*) or (confidence W5 psychiatrist*) or (confidence W5 psychotherapist*) or (confidence W5 clinician*) or (confidence W5 medical)	Search modes - Boolean/Phrase
S3	AB (trust* or mistrust* or distrust* or entrust*)	Search modes - Boolean/Phrase
S2	TI (trust* or mistrust* or distrust* or entrust*)	Search modes - Boolean/Phrase
S1	MH trust	Search modes - Boolean/Phrase

Appendix 7. Proquest search strategy - update

trust* or mistrust* or distrust* or entrust*

AND

physician* or doctor or doctors or gp or gps or general practi* or surgeon* or psychiatrist* or psychotherapist* or clinician* or pediatrician* or geriatrician* or gerontologist* or gynaecologist* or (medical W/1 (practi* or staff or person* or profession* or organization))

AND

random* or trial or assign* or allocat* or intervention* or experiment* or control* or compar* or prospectiv*

Appendix 8. Current Contents search strategy - Update

1. (mistrust* or distrust* or entrust* or trust*).tw.
2. (physician* or doctor* or gp or gps or general-practi* or surgeon* or specialist* or hospitalist* or psychiatrist* or psychotherapist* or clinician* or pediatrician* or geriatrician* or gerontologist* or gynecologist* or gynaecologist*).tw.
3. (medical adj (practi* or staff or personnel or profession* or organi#ation*)).tw.
4. (therapeutic* adj (relationship* or alliance*)).tw.
5. or/2-4
6. 1 and 5
7. random*.mp.
8. (experiment* or intervention*).mp.
9. trial*.mp.
10. placebo*.mp.
11. ((singl* or doubl* or trebl* or tripl*) and (blind* or mask*)).mp.
12. (pre test or pretest or post test or posttest).mp.
13. (preintervention or postintervention).mp.
14. (cross over or crossover or factorial* or latin square).mp.
15. (assign* or allocat* or volunteer*).mp.
16. (control* or compar* or prospectiv*).mp.
17. (impact* or effect? or chang* or evaluat*).mp.
18. or/7-17
19. (beha or clin).sb.
20. 6 and 18 and 19
21. limit 20 to yr="2003-Current"

WHAT'S NEW

Last assessed as up-to-date: 18 March 2013.

Date	Event	Description
13 February 2014	New citation required but conclusions have not changed	This updated review added seven new studies to the original three. The total number of participants increased to 11,063 people The conclusions did not change. Authorship of the review has changed in this version.
18 March 2013	New search has been performed	Searches updated to 18 March 2013.
18 March 2013	Amended	We used new search strategies, compiled by the Cochrane Consumers and Communication Review Group. There were some changes in the databases searched, due to changes in access We updated the study design criterion to incorporate more rigorous requirements for controlled before and after studies and interrupted time series. We now use the term 'quasi-randomised controlled trials' instead of 'controlled clinical trials' Adverse events and source of funding were included in the data extraction

(Continued)

		There have been minor changes to the wording of the objectives, and revision of background information Additional information on the validation of trust scales is given in a new table We assessed all included studies using the Cochrane Collaboration's 'Risk of bias' tool
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HISTORY

Protocol first published: Issue 2, 2003

Review first published: Issue 3, 2006

Date	Event	Description
30 August 2006	Amended	Minor corrections to text and tables

CONTRIBUTIONS OF AUTHORS

For [McKinstry 2006](#): All the original authors, (BM, JC, AZ, GF, RA) contributed to the review design, analysis and writing. JC performed the original electronic searches and initially managed the review. BM was responsible for the final management and writing of the original review.

For the current update: AR and BM performed the updated searches and wrote and managed the updated review. BM, JC, AZ and LC-G all contributed to the updated review by reviewing references, extracting data and writing.

DECLARATIONS OF INTEREST

None known

SOURCES OF SUPPORT

Internal sources

- NHS Education for Scotland, UK.
Clinical research fellowship funding for AR.
- Edinburgh MRC Methodology Trials Hub, UK.
Salary support for AS.
- NHS Lothian through the Edinburgh Health Services Research Unit, UK.
Salary support for BM.

External sources

- No sources of support supplied

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

Due to changes in access to databases the updated search contains the results from some of the databases previously searched, plus results from other accessible databases.

We tightened the study design criteria for CBA and ITS studies in the updated review. As no CBA or ITS studies were included in the original review (McKinstry 2006), no included studies were affected by this change.

We applied the Cochrane Collaboration's 'Risk of bias' tool (Higgins 2011, Chapter 8) to all included studies, replacing the Cochrane Effective Practice and Organisation of Care (EPOC) Review Group's data collection checklist which we had used to assess study quality in the previous iteration of this review.

NOTES

For future updates of the review we will consider assessing the following additional outcomes suggested by referees and/or identified in the literature:

- Healthcare behaviours: adherence to medication; increase in knowledge about condition.
- Health status: weight.
- Proportion of patients changing physician; frequency of complaints/disputes concerning physician.
- Patient/carer perception of doctor's communication skills: cultural competency.
- Patient/carer perception of doctor's humanistic attributes: empathy.

INDEX TERMS

Medical Subject Headings (MeSH)

*Patient Satisfaction; *Physician-Patient Relations; Randomized Controlled Trials as Topic; Trust [*psychology]

MeSH check words

Humans