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Interventions aimed at communities to inform and/or educate about early childhood vaccination (Review)

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[Intervention Review]

Interventions aimed at communities to inform and/or educate about early childhood vaccination

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ABSTRACT

Background

A range of strategies are used to communicate with parents, caregivers and communities regarding child vaccination in order to inform decisions and improve vaccination uptake. These strategies include interventions in which information is aimed at larger groups in the community, for instance at public meetings, through radio or through leaflets. This is one of two reviews on communication interventions for childhood vaccination. The companion review focuses on face-to-face interventions for informing or educating parents.

Objectives

To assess the effects of interventions aimed at communities to inform and/or educate people about vaccination in children six years and younger.

Search methods

We searched CENTRAL, MEDLINE, EMBASE and five other databases up to July 2012. We searched for grey literature in the Grey Literature Report and OpenGrey. We also contacted authors of included studies and experts in the field. There were no language, date or settings restrictions.

Selection criteria

Individual or cluster-randomised and quasi-randomised controlled trials, interrupted time series (ITS) and repeated measures studies, and controlled before-and-after (CBA) studies. We included interventions aimed at communities and intended to inform and/or educate about vaccination in children six years and younger, conducted in any setting. We defined interventions aimed at communities as those directed at a geographic area, and/or interventions directed to groups of people who share at least one common social or cultural characteristic. Primary outcomes were: knowledge among participants of vaccines or vaccine-preventable diseases and of vaccine service delivery; child immunisation status; and unintended adverse effects. Secondary outcomes were: participants' attitudes towards vaccination; involvement in decision-making regarding vaccination; confidence in the decision made; and resource use or cost of intervention.

Data collection and analysis

Two authors independently reviewed the references to identify studies for inclusion. We extracted data and assessed risk of bias in all included studies.

Main results

We included two cluster-randomised trials that compared interventions aimed at communities to routine immunisation practices. In one study from India, families, teachers, children and village leaders were encouraged to attend information meetings where they received information about childhood vaccination and could ask questions. In the second study from Pakistan, people who were considered to be trusted in the community were invited to meetings to discuss vaccine coverage rates in their community and the costs and benefits of childhood vaccination. They were asked to develop local action plans and to share the information they had been given and continue the discussions in their communities.

The trials show low certainty evidence that interventions aimed at communities to inform and educate about childhood vaccination may improve knowledge of vaccines or vaccine-preventable diseases among intervention participants (adjusted mean difference 0.121, 95% confidence interval (CI) 0.055 to 0.189). These interventions probably increase the number of children who are vaccinated. The study from India showed that the intervention probably increased the number of children who received vaccinations (risk ratio (RR) 1.67, 95% CI 1.21 to 2.31; moderate certainty evidence). The study from Pakistan showed that there is probably an increase in the uptake of both measles (RR 1.63, 95% CI 1.03 to 2.58) and DPT (diptheria, pertussis and tetanus) (RR 2.17, 95% CI 1.43 to 3.29) vaccines (both moderate certainty evidence), but there may be little or no difference in the number of children who received polio vaccine (RR 1.01, 95% CI 0.97 to 1.05; low certainty evidence). There is also low certainty evidence that these interventions may change attitudes in favour of vaccination among parents with young children (adjusted mean difference 0.054, 95% CI 0.013 to 0.105), but they may make little or no difference to the involvement of mothers in decision-making regarding childhood vaccination (adjusted mean difference 0.043, 95% CI -0.009 to 0.097).

The studies did not assess knowledge among participants of vaccine service delivery; participant confidence in the vaccination decision; intervention costs; or any unintended harms as a consequence of the intervention. We did not identify any studies that compared interventions aimed at communities to inform and/or educate with interventions directed to individual parents or caregivers, or studies that compared two interventions aimed at communities to inform and/or educate about childhood vaccination.

Authors' conclusions

This review provides limited evidence that interventions aimed at communities to inform and educate about early childhood vaccination may improve attitudes towards vaccination and probably increase vaccination uptake under some circumstances. However, some of these interventions may be resource intensive when implemented on a large scale and further rigorous evaluations are needed. These interventions may achieve most benefit when targeted to areas or groups that have low childhood vaccination rates.'

PLAIN LANGUAGE SUMMARY

Interventions aimed at communities for informing and/or educating about early childhood vaccination

Researchers in The Cochrane Collaboration conducted a review of the effect of informing or educating members of the community about early childhood vaccination. After searching for all relevant studies, they found two studies, published in 2007 and 2009. Their findings are summarised below.

What are interventions aimed at communities for childhood immunisation?

Childhood vaccinations can prevent illness and death, but many children do not get vaccinated. There are a number of reasons for this. One reason may be that families lack knowledge about the diseases that vaccines can prevent, how vaccinations work, or how, where or when to get their children vaccinated. People may also have concerns (or may be misinformed) about the benefits and harms of different vaccines.

Giving people information or education so that they can make informed decisions about their health is an important part of all health systems. Vaccine information and education aims to increase people's knowledge of and change their attitudes to vaccines and the diseases that these vaccines can prevent. Vaccine information or education is often given face-to-face to individual parents, for instance during home visits or at the clinic. Another Cochrane Review assessed the impact of this sort of information. But this information can also be given to larger groups in the community, for instance at public meetings and women's clubs, through television or radio programmes, or through posters and leaflets. In this review, we have looked at information or education that targeted whole communities rather than individual parents or caregivers.

The review found two studies. The first study took place in India. Here, families, teachers, children and village leaders were encouraged to attend information meetings where they were given information about childhood vaccination and could ask questions. Posters and leaflets were also distributed in the community. The second study was from Pakistan. Here, people who were considered to be trusted in the community were invited to meetings where they discussed the current rates of vaccine coverage in their community and the costs and benefits of childhood vaccination. They were also asked to develop local action plans, to share the information they had been given and continue the discussions with households in their communities.

What happens when members of the community are informed or educated about vaccines?

The studies showed that community-based information or education:

- may improve knowledge of vaccines or vaccine-preventable diseases;

- probably increases the number of children who get vaccinated (both the study in India and the study in Pakistan showed that there is probably an increase in the number of vaccinated children);

- may make little or no difference to the involvement of mothers in decision-making about vaccination;

- may change attitudes in favour of vaccination among parents with young children;

We assessed all of this evidence to be of low or moderate certainty.

The studies did not assess whether this type of information or education led to better knowledge among participants about vaccine service delivery or increased their confidence in the decision made. Nor did the studies assess how much this information and education cost or whether it led to any unintended harms.

SUMMARY OF FINDINGS

Summary of findings for the main comparison.

Interventions aimed at communities to inform and/or educate about early childhood vaccination versus routine immunisation practices in primary and community care

People: community members

Settings: primary and community care

Intervention: interventions to inform and/or educate members of the community about early childhood vaccination

Comparison: routine immunisation practices

Outcomes	Impact				Number of participants (studies)	Certainty of the evidence (GRADE)†
	Absolute effect*		Estimated effects	Results in words		
	Without interventions aimed at communities	With interventions aimed at communities				
Knowledge among participants of vaccine or vaccine-preventable disease (number of people whose vaccine knowledge had increased; follow-up: mean = 2 years; assessed through household survey using a questionnaire)	59 per 100 people	71 per 100 people (from 65 to 78)	Adjusted mean difference 0.121 (95% CI 0.06 to 0.19)	The intervention may improve knowledge of vaccine-preventable diseases among intervention participants	5582[1]	⊕⊕⊖⊖ Low[2]
Knowledge among participants of vaccine service delivery	The included studies did not assess this outcome					
Immunisation status of child (follow-up: mean = 2 years; assessed through household survey using a questionnaire)	Pooling of the data from these studies was not possible		• Study 1 (any vaccine): RR 1.67 (95% CI 1.21 to 2.31) • Study 2 (measles): RR 1.63 (95% CI 1.03 to 2.58)	One study showed that the intervention probably increases the number of children who received one or more vaccinations. A second study showed that the intervention probably increases the uptake of both measles and DPT vaccines but makes little or no difference to the number of	• Study 1 (any vaccine): 228 • Study 2 (measles): 956 • Study 2 (DPT): 957 • Study 2 (polio): 952	⊕⊕⊕⊖ Moderate[4]

			• Study 2 (DPT): RR 2.17 (95% CI 1.43 to 3.29) • Study 2 (polio): RR 1.01 (95% CI 0.97 to 1.05)	children who received polio vaccine	3	
Participants' attitudes towards vaccination (number of parents who think it is worthwhile to vaccinate children; follow-up: mean = 2 years; assessed through household survey using a questionnaire)	86 per 100 parents	91 per 100 parents (from 87 to 96)	Adjusted mean difference 0.054 (95% CI 0.01 to 0.11)	The intervention may improve attitudes towards vaccination among intervention participants	5636[1]	⊕⊕⊖⊖ Low[5]
Participants' involvement in decision-making regarding vaccination (number of mothers included in decisions about vaccination; follow-up: mean = 2 years; assessed through household survey using a questionnaire)	55 per 100 mothers	60 per 100 mothers (from 54 to 65)	Adjusted mean difference 0.043 (95% CI -0.01 to 0.1)	The intervention may make little or no difference to the involvement of mothers in decision-making regarding vaccination	5565[1]	⊕⊕⊖⊖ Low[6]
Participant confidence in the decision made regarding vaccination	The included studies did not assess this outcome					
Unintended or adverse effects	The included studies did not assess this outcome					
Resource use or cost of the intervention	The included studies did not assess this outcome					

*The absolute effect WITHOUT the intervention is based on data from the trial control group. The corresponding absolute effect WITH the intervention is based on the estimated effect of the intervention relative to the control group.
CI: confidence interval; **RR:** risk ratio; **DPT:** diphtheria, pertussis and tetanus vaccine

†GRADE Working Group grades of evidence

High certainty: This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different^ is low.

Moderate certainty: This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different^ is moderate.

Low certainty: This research provides some indication of the likely effect. However, the likelihood that it will be substantially different^ is high.

Very low certainty: This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different^ is very high.

^Substantially different = a large enough difference that it might affect a decision

[1] Andersson 2009.

[2]Downgraded due to risk of bias, as the outcome is based on self report; indirectness as the outcome assessed in the trial is not identical to that specified in the review; and sparse data drawn from a single study.

[3] Andersson 2009 (study 2), Pandey 2007 (study 1 - unpublished data).

[4]Downgraded due to some imprecision (wide confidence intervals that include both little effect and a substantial effect) and some inconsistency across the findings from the two studies.

[5]Downgraded due to risk of bias, as the outcome is based on self report; indirectness as the outcome assessed in the trial is not identical to that specified in the review; and sparse data drawn from a single study.

[6]Downgraded due to risk of bias, as the outcome is based on self report; indirectness as the outcome assessed in the trial is not identical to that specified in the review; and sparse data drawn from a single study.

BACKGROUND

This Cochrane Review was undertaken as part of a two-year, multi-stage research project called 'Communicate to Vaccinate 1' (COMMVAC 1) (Lewin 2011). The COMMVAC project focuses on building research knowledge and capacity to use evidence-based strategies for improving communication about childhood vaccinations with parents and communities in low- and middle-income countries (LMICs). This review is one of two reviews focusing on communication interventions to inform and/or educate about childhood vaccination. A series of deliberative forums identified the topics of both reviews as highly relevant to vaccine programme managers, policy-makers and other key stakeholders in LMICs. The companion review focuses on face-to-face interventions for informing or educating parents (Kaufman 2013), while this review excludes interventions that target only individual parents or caregivers and focuses on interventions aimed at communities. The two reviews were developed in close collaboration, and our review uses some of the same text as Kaufman 2013 in the Background and Methods sections, with their permission.

Description of the condition

Vaccination has been described as one of the greatest public health achievements of the 20th century (CDC 1999), and is seen widely as a worthwhile and cost-effective public health measure. Vaccination programmes have led to the global eradication of smallpox, and large reductions in disability and death from polio, measles, tetanus, rubella, diphtheria and *Haemophilus influenzae* type b (CDC 1999). However, over 24 million children are still without access to this important health intervention (Jheeta 2008; Wiysonge 2009), contributing to millions of preventable child deaths in LMICs (GAVI 2012). Efforts to improve vaccination coverage in LMICs are central to meeting the Millennium Development Goal (MDG) of reducing child mortality (United Nations 2011).

Routine vaccination is also an important issue in high-income countries (HICs), many of which experience equity-related challenges to achieving high vaccination coverage rates. A number of socio-economic factors can affect coverage, including indigenous or ethnic status, poverty, large family size and low educational attainment. Consequently, certain population groups in HICs may have coverage rates below the national average, in some cases as low as those in some LMICs (Thomson 2012). For example, in Australia the 'fully immunised' vaccination coverage estimate in 2009 for Indigenous children aged 12 months was 85%, compared to 92.2% for non-Indigenous children. However, this disparity was greatly reduced at 24 months, with 90.6% and 92.2% fully vaccinated for Indigenous and non-Indigenous children respectively (Hull 2011). In the USA, there are still disparities in coverage rates based on socio-economic status (Wooten 2010). A study from Austria has also shown that low educational attainment and high numbers of children in one family are associated with lower levels of vaccination coverage (Stronegger 2010).

Another cause of regional vaccination coverage variation in HICs is individuals who refuse some or all vaccination of their children. Vaccination objectors are probably more common in HICs and also tend to be grouped in particular regions. While they constitute a small proportion of the country's population overall, they may significantly lower coverage in certain areas (Diekema 2012; Hull 2010).

The term 'vaccine hesitancy' has been used in recent years to help understand behaviour in relation to vaccination. The WHO has defined vaccine hesitancy as "A behaviour, influenced by a number of factors including issues of confidence (do not trust vaccine or provider), complacency (do not perceive a need for a vaccine, do not value the vaccine), and convenience (access). Vaccine-hesitant individuals are a heterogeneous group who hold varying degrees of indecision about specific vaccines or vaccination in general. Vaccine-hesitant individuals may accept all vaccines but remain concerned about vaccines, some may refuse or delay some vaccines, but accept others; some individuals may refuse all vaccines" (WHO 2013). Determinants of vaccine hesitancy have been conceptualised as falling into three domains: contextual influences, including socio-cultural and health systems factors; individual and group influences, including those rising from personal perceptions of a vaccine; and vaccine or vaccination-specific issues, including individual assessments of risks and benefits and the effects of the mode of administration (WHO 2013).

Large numbers of qualitative and quantitative studies, as well as some reviews, have explored the reasons for vaccine hesitancy and the non-vaccination of children (Dubé 2013; Larson 2014). Overall, the reviews highlight that vaccination decision-making is a complex process, influenced by many factors. An important barrier in many settings is not being appropriately informed and, consequently, being in doubt about the trade-offs between the benefits and harms of vaccination and having fears about side effects (Casiday 2006; Hadjikoumi 2006; Mills 2005; Pearce 2008; Taylor 2002). People may lack knowledge about how vaccinations and the process of immunisation 'works', but also about the diseases which vaccines may help prevent (Casiday 2006; Mills 2005; Woo 2004).

A key barrier to obtaining and using information on vaccination is people's poor understanding of medical and health-related scientific concepts that are important for decision-making, such as risk, uncertainty and causality (Casiday 2006; Tickner 2006; Woo 2004). Furthermore, people may not base their decision on evidence-based information (Paulussen 2006; Tickner 2006). Studies have found that decision-making about childhood vaccinations is often based on trust and personal experiences (Tickner 2006). For both vaccinators and non-vaccinators, the decision is based on the intention to minimise the child's exposure to harm (Paulussen 2006; Tickner 2006). However, what people trust and who they trust have been found to differ somewhat between those deciding to vaccinate and those who decline. Vaccinators are generally more positive with regard to conventional sources of information, such as national health institutions and health personnel, while non-vaccinators have been found to rely more on alternative sources of health information (Casiday 2006; Pearce 2008). The recent attacks on vaccination teams in Pakistan, with almost 30 vaccinators killed in the last two years, illustrate the extent to which suspicions about vaccination, linked to misinformation about the purpose and effects of vaccination, may have significant impacts on both vaccination programme staff and the communities in which they work (Boone 2014).

The perceived dangers of vaccination and the likelihood of vaccine side effects are also important influences on whether parents will allow their children to be vaccinated. Studies have shown that caregivers who do not vaccinate have very different views about

the likelihood of a serious side effect than caregivers who take their children for vaccination (Meszaros 1996). Fear associated with vaccination has also been attributed to mass media reports about serious harms associated with vaccination (Woo 2004). Further, evidence suggests that there is more public controversy associated with new vaccines than with the more established vaccines, often based on a perception that new vaccines have not been tested adequately (Tickner 2006). A recent example of such a controversy is the debate about vaccination against swine flu (H1N1 influenza virus) (Teasdale 2011).

The extent to which socio-demographic variables predict vaccination uptake varies somewhat across study populations. However, studies exploring uptake of, for example, the measles, mumps and rubella (MMR) vaccine have suggested that the number of children in a family, being a single parent and the mother's age may be related to vaccination status (Casiday 2006; Pearce 2008; Wright 2006). Vaccination coverage has also been found to be less optimal in areas with high population density and deprived populations (Wright 2006). Also, populations with higher education levels have been found to have a more rapid decline in coverage (Wright 2006) and to be more sceptical towards vaccination than populations with lower education levels. However, this may be explained by a differential response to health messages across these groups (Pearce 2008).

Other barriers to vaccination uptake include religious or philosophical beliefs (Mills 2005; Taylor 2002); practical issues such as costs, accessibility, forgetting appointments, lack of time and other commitments (Mills 2005; Tickner 2006); or medical issues including having allergies or an illness (Hadjikoumi 2006; Pearce 2008). Studies also indicate that communication between parents and health professionals may not be optimal as a consequence of time constraints during consultations; health professionals delivering information framed as recommendations instead of in ways that would facilitate a decision based on weighing the benefits and risks; and parents perceiving health professionals as biased or unwilling to discuss their concerns (Hobson-West 2007; Mills 2005; Tickner 2006).

Description of the intervention

The exchange or delivery of information or education is a feature in all contexts of the health system, as people must decide whether or not to participate in health programmes or take particular actions. Such decisions are based on the information and knowledge that people have or acquire (Zyngier 2011). Successful vaccination programmes rely on people having sufficient knowledge to make an informed decision to participate (Shahrabani 2009).

Information provision and education may be undertaken in various ways. This review will focus on interventions aimed at communities to inform or educate about vaccination in children aged six years and younger. The interventions may include: printed materials such as brochures, pamphlets, posters or fact sheets; electronic media such as videos, slide shows, web-based programmes or audio recordings; and large-scale media such as billboards, newspaper, television and radio.

Information versus education

We have chosen to examine interventions whose purpose is to inform as well as those whose purpose is to educate. Most texts use the words 'inform' or 'educate' in tandem or interchangeably, and there is no consistent differentiation between these purposes. Kaufman 2012 conducted a content analysis to see how these terms were used, described and defined in practice. They found some consistencies in the ways that agencies and publications describe interventions to 'inform and educate'. Interventions to inform often: are utilised for the provision and dissemination of up-to-date, tailored and accurate information; involve limited interaction, as they are mainly targeted to many people at one time; and are recognised as being insufficient to lead to behaviour change (Hollands 2011). Interventions to educate were found to involve verbal communication and some level of interaction; can be supplemented with educational tools, educational materials and written information; and facilitate learning and greater comprehension.

In this review, we looked at interventions to inform and/or educate without distinguishing between them (see below for a definition of these interventions). The goal of these interventions is to achieve outcomes such as knowledge of vaccines, vaccine-preventable diseases or service delivery; increased involvement in decision-making; better informed decisions and more confidence in the decision made regarding vaccination; and improved vaccination coverage. Interventions to inform or educate may be tailored to address low literacy levels and can also serve to address misinformation. To better understand the content of these interventions, we recorded all information related to the nature of the intervention for each included study at the data extraction stage.

Delivery mechanisms

Interventions to inform and/or educate that are aimed at communities or groups of community members may be a cost-effective method of reaching many people. The interventions can be delivered by a range of mechanisms, including face-to-face interactions (e.g. vaccination education sessions held at an immunisation carnival; vaccine information disseminated at public meetings or woman's clubs), mass-media campaigns (e.g. vaccine information disseminated via television, radio, Internet, newspapers, billboards) or mail (e.g. postcards, letter or emails). The audience or target group for these interventions may include all people living in the communities in which the intervention takes place; groups with particular characteristics (e.g. young mothers); or virtual communities (e.g. online parents' forums).

Examples of interventions to inform and/or educate communities or community members about childhood vaccination include:

- USA: a media-based education and outreach campaign to improve knowledge and awareness of hepatitis B and children's receipt of hepatitis B vaccination (McPhee 2003a);
- India: an information campaign focusing on services to which people were entitled, and consisting of meetings and the distribution of posters and leaflets directed towards resource-poor rural populations; vaccinations received by infants was one of the outcomes assessed (Pandey 2007); and
- Pakistan: evidence-based, structured, group discussions in the community on the prevalence of measles among children and the importance of childhood immunisation (Andersson 2009).

This review aimed to assemble the global evidence on interventions to inform and/or educate communities or community members about childhood vaccination. We were interested in

whether the effects of these interventions varied by type of delivery mechanism, and planned subgroup analyses to explore this (see Appendix 1).

How the intervention might work

The interventions aim to increase participants' levels of knowledge and/or change their attitudes regarding vaccination. Changes in knowledge and/or attitudes can be regarded as intermediate outcomes, and may lead to at least two more distal outcomes:

1. a change in the number of participants who make informed decisions regarding childhood vaccination (which may include the decision not to vaccinate); and
2. a change in childhood vaccination rates.

It is important to note that the pathway from improved knowledge and information to changes in attitudes towards vaccination and, finally, to improved uptake of vaccination is not necessarily linear or simple. Increased knowledge may, for example, result in more informed decision-making among caregivers, but not in increased childhood vaccination uptake.

As noted above, interventions aimed at communities may be a cost-effective method of reaching many people. In addition, the sharing and discussion of information within groups, such as women's groups, may enhance the uptake of this information, raise awareness of childhood vaccination issues and facilitate informed decision-making regarding vaccination.

Why it is important to do this review

The COMMVAC project held a series of deliberative forums (both face-to-face and online) in June and July 2011 to discuss the project's taxonomy of communication interventions and to determine priority topics for systematic reviews of effects. Those invited to participate included vaccination programme managers, policy-makers, researchers and other vaccination stakeholders. The forums included representatives from HICs and LMICs, but focused on the needs of LMICs in particular. The participants identified interventions aimed at communities or community members as a strategy that is used widely and is highly relevant (Willis 2013). However, the implementation of these interventions requires resources including money, time and trained personnel (UNICEF 2000). It is therefore critical to determine whether interventions aimed at communities to inform and/or educate are effective, so as to inform decisions about the use of resources on these strategies.

Overlap with other reviews

Our review is closely related to two other reviews: 'Interventions for improving coverage of child immunisation in low- and middle-income countries' by Angela Oyo-Ita and colleagues (Oyo-Ita 2011) and 'Face-to-face interventions for informing or educating parents about early childhood vaccination' by Jessica Kaufman and colleagues (Kaufman 2013). It also has some overlap with other reviews. Table 1 describes the differences between our review and these other reviews. This review and the Kaufman review ('the COMMVAC reviews') consider specific sets of 'communicate to vaccinate' interventions, but with a global rather than a LMIC focus. We know from the COMMVAC mapping process that a significant proportion of these communication interventions have not been evaluated in LMICs. Although there is some overlap between Oyo-Ita 2011 and the COMMVAC reviews, these global reviews will provide a more complete picture of the effects of these specific communication interventions (while the Oyo-Ita review considers all interventions to increase vaccination coverage, but is restricted to studies conducted in LMICs). The review author teams for these three reviews were in close contact and addressed any overlap by:

1. outlining clearly in each review the scope of the related reviews;
2. discussing studies identified from LMIC and HIC settings, and any differences and similarities between these;
3. discussing the effects of communication interventions in relation to other interventions to improve immunisation coverage, as identified in Oyo-Ita 2011.

OBJECTIVES

To assess the effects of interventions aimed at communities to inform and/or educate people about vaccination in children six years and younger.

METHODS

Criteria for considering studies for this review

Types of studies

Interventions to 'inform and educate' that aim to reach communities, or groups of community members, are likely to have been evaluated using a wide variety of approaches and designs. For some of these interventions, for example those delivered through mass media such as newspapers or radio, randomisation may not be feasible and other evaluation designs may be needed.

We therefore included the following types of studies.

- Randomised controlled trials (RCTs), with randomisation at either individual or cluster level. For cluster-RCTs, we only included those with at least two intervention and two control clusters.
- Quasi-randomised controlled trials, with allocation at either individual or cluster level. We included studies that allocated by alternation between groups, by the use of birth dates or weekdays or by other quasi-random methods. For cluster trials, we only included those with at least two intervention and two control clusters.
- Interrupted time series (ITS) and repeated measures studies with a clearly defined point in time when the intervention occurred and at least three data points both before and after the intervention.
- Controlled before-and-after (CBA) studies with a minimum of two intervention and two control sites; comparable timing of the periods of study for the control and intervention groups; and comparability of the intervention and control groups on key characteristics.

Types of participants

We included interventions which targeted groups of people (the general public), including, for example, parents and other caregivers and family members of young children, community leaders, teachers, health personnel (as part of a wider community intervention) and other influential community members. Some of these groups are the 'end' target group for vaccination communication interventions (such as parents and other

caregivers) while other groups are 'intermediaries' who are targeted because of their ability to convey information to or educate the end target group. Such intermediaries include community leaders, teachers and other influential community members, such as religious leaders.

We excluded interventions that targeted individuals directly and were not aimed at communities. Hence we excluded studies in which the interventions targeted individual parents or caregivers directly, except where these individuals functioned as the control group for an eligible intervention.

Some studies examined interventions aimed at a group (such as mothers of children attending a paediatric clinic) that comprised individual people attending a health facility for a health issue related to the intervention (i.e. they had no pre-existing group relationship to one another, and were selected to participate as individuals). In such cases, we excluded the study if the group was constituted for the purposes of the trial, but included it if the group constituted a social or natural group prior to the trial.

Types of interventions

We included interventions aimed at communities, with a broad audience and purpose (see definition below) and that were intended to inform and/or educate about vaccination in children six years and younger. We defined 'inform and/or educate' interventions as those that enabled consumers to understand the meaning and relevance of vaccination to their health and the health of their family or community, and/or made them aware of the practical and logistical factors associated with vaccination. Interventions to inform and/or educate may be tailored to address issues such as low literacy levels or misinformation.

We defined interventions aimed at communities as those directed at a geographic area and/or interventions directed to groups of people who share at least one common social or cultural characteristic. This definition of interventions aimed at communities is based on definitions developed for other reviews, including Baker 2011. These interventions can be delivered by a broad range of people such as health personnel, lay people, governmental institutions, civil society organisations and other non-governmental organisations. Delivery mechanisms may include: printed materials such as brochures, pamphlets, posters or fact sheets; electronic media such as videos, slide shows, web-based programmes, virtual online communities or audio recordings; large-scale media such as billboards, newspaper, television and radio; and face-to-face communication with groups of people.

Participants' involvement in these interventions may vary from passive to active. For example, people may be fairly passive recipients of mass media interventions, such as information provided on billboards, or more active participants in community meetings on child health.

We included interventions that aimed to inform and/or educate about vaccination in children six years and younger as well as in older children or others, provided that the main focus of the intervention was on children six years and younger, or that relevant outcomes for children aged six years and younger were reported separately.

We included multi-faceted interventions if it was possible to separate out the effects of the communication component aimed at communities and that concerned childhood vaccination, i.e. the results for the interventions aimed at communities to inform and/or educate regarding vaccination needed to be reported separately.

We excluded interventions focused on reminding or recalling recipients regarding vaccination if they did not include an information and/or education component or purpose.

We included relevant studies conducted in any setting (including LMICs and HICs).

Comparisons:

- Interventions aimed at communities to inform and/or educate versus:
  - routine immunisation practices in the study setting (i.e. the activities undertaken on a day-to-day basis in the study setting to promote immunisation uptake and deliver immunisation services, such as sending reminders to caregivers or writing the next immunisation date on the child's health card);
  - other interventions to promote immunisation uptake; or
  - no intervention.
- Interventions aimed at communities to inform and/or educate versus interventions directed specifically to individual parents or caregivers of children.
- One community-aimed intervention to inform and/or educate versus another community-aimed intervention to inform and/or educate.

Types of outcome measures

We only included studies if they assessed any of the following primary or secondary outcomes:

Primary outcomes

- Knowledge among participants of vaccines or vaccine-preventable diseases.
- Knowledge among participants of vaccine service delivery.
- Immunisation status of child (e.g. immunisation status up-to-date as defined by the author of the included study: receipt of one or more vaccines).
- Any other measures of vaccination status in children (e.g. immunisation status for a specific vaccine, number of vaccine doses received).
- Unintended adverse effects due to the intervention.

Immunisation status may be defined slightly differently across studies (e.g. receipt of a single or multiple vaccines; timeliness of vaccination). We have accepted the definition of immunisation status used by study authors.

Secondary outcomes

- Participants' attitudes towards vaccination (the term 'attitudes' covers beliefs about vaccination, and may include intention to vaccinate).
- Participant involvement in decision-making regarding vaccination.

- Participant confidence in the decision made regarding vaccination.
- Resource use or cost of intervention.

We included the first three of the secondary outcomes listed above in this review as they relate to the pathway from improved knowledge and information to changes in attitudes towards vaccination and, finally, to improved uptake of vaccination (see Background).

The occurrence of vaccine-preventable diseases is an outcome of immunisation, rather than of an intervention to inform and/or educate, and is affected by many other factors. We therefore have not reported this outcome.

To accommodate multiple or varying outcome assessment time points, we have recorded outcomes in the following categories:

- Immediate: up to one month following completion of the intervention.
- Short-term: between one and six months following the completion of the intervention.
- Long-term: more than six months following the completion of the intervention.

Search methods for identification of studies

Electronic searches

We searched the following international and regional sources:

- Cochrane Central Register of Controlled Trials (CENTRAL) (11 July 2012);
- MEDLINE (OvidSP) MEDLINE In-Process & Other Non-Index Citations (OvidSP) (1946 to June 2012);
- EMBASE (OvidSP) (1947 to July 2012);
- CINAHL (EbscoHOST) (date of search: 19 July 2012);
- PsycINFO (OvidSP) (1806 to July 2012);
- ERIC (ProQuest) (1966 to July 2012);
- Global Health (CAB) (1910 to June 2012);
- WHO Global Health Library (including WHOLIS, LILACS and other regional databases) (date of search: 26 July 2012).

We also searched the following grey literature databases:

- The Grey Literature Report: http://www.nyam.org/library/online-resources/grey-literature-report/;
- OpenGrey: http://www.opengrey.eu/.

All the strategies are presented in Appendix 2. Strategies have been tailored to the other databases and are reported in the Appendix. There were no date restrictions in the searches.

We conducted the searches in English. We assessed titles and abstracts published in any language, and obtained translation of potentially eligible studies where needed.

Searching other resources

We contacted the authors of included studies and the members of the COMMVAC project (www.commvac.com) advisory group for additional references.

Data collection and analysis

The data collection and analysis methods were described in the review protocol (Saeterdal 2012). We used Reference Manager software version 12 to store the records retrieved from the search (Reference Manager 12). We then used the Early Review Organizing Software version 2.0 to manage the records retrieved from the search following initial eligibility assessment and to facilitate full-text screening of papers (EROS 2012).

Selection of studies

The review authors worked in pairs to independently screen all titles and abstracts identified in the search, and assess eligibility based on the Criteria for considering studies for this review. We retrieved all potentially eligible references in full text and the review authors then worked in pairs and independently assessed these references for inclusion against the Criteria for considering studies for this review. We resolved any disagreements through discussion and consulted one of the other review authors when required.

Data extraction and management

Two review authors working in pairs extracted data independently from all included studies. Data extraction was informed by lessons learned in the earlier evidence mapping stages of the COMMVAC project (Willis 2013). We used a data extraction form that combined features of the template developed by the Cochrane Consumers and Communication Review Group (CC & CRG 2011), the Cochrane equity checklist (Ueffing 2011), and the COMMVAC data extraction template. The form included questions to capture the following data:

Identification details of the study: authors, year of publication, the country and setting in which it was conducted, language and study design.

Participant characteristics: type of participant (type of community member), numbers, gender, age, ethnicity, religion, socio-economic status, level of education, etc. We also recorded type and characteristics of the community (geographic area, social or cultural characteristics, local vaccination policy).

Intervention characteristics: type of intervention, intervention purpose, content of communication, intervention delivery mechanism. We also recorded information about the vaccine that was the focus of the intervention. We recorded similar characteristics for the comparator.

Outcomes: outcome data (results), methods for assessing/measuring the outcome data, length of follow-up, loss to follow-up data. We noted additional outcomes in the data extraction template.

One of the authors (IS) entered the data into the Review Manager software (RevMan 2012) and second author (AAD or SMB) then checked the data. We resolved disagreements regarding the data extracted by discussion and, when necessary, by consulting a third review author (CG or SL).

For studies published only as abstracts, we planned to contact the study authors for further information and to list these studies under 'Studies awaiting classification' until further information was obtained. For study reports that contained little information about

methods and results, we contacted the authors to obtain further details on these elements.

Assessment of risk of bias in included studies

We assessed and reported on the methodological risk of bias of included studies in accordance with the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011), and the guidelines of the Cochrane Consumers and Communication Review Group (Ryan 2011), which recommends the explicit reporting of the following individual elements for RCTs: random sequence generation; allocation sequence concealment; blinding (participants, personnel); blinding (outcome assessment); completeness of outcome data; selective outcome reporting; and any other sources of bias such as contamination. For each domain we have described the relevant information provided by the authors and judged each item as being at high, low or unclear risk of bias as set out in the criteria provided by Higgins 2011.

For cluster-RCTs we also assessed the risk of bias associated with an additional domain: selective recruitment of participants (Ryan 2011). Two authors assessed the risk of bias of included studies independently. We resolved disagreements between review authors regarding 'Risk of bias' assessment by discussion and, when necessary, by consulting a third review author (CG or SL).

We did not include any ITS or CBA studies. For a description of the methods we intended to use, see Appendix 1.

Overall risk of bias

We summarised the risk of bias on two levels: within studies (across domains) and across studies (for each primary outcome). Judgement on the overall risk of bias took into account the likely magnitude and direction of the bias and whether we considered the bias to impact on the findings.

We deemed studies to be at highest risk of bias if they scored 'high risk' in one or more of the following domains: sequence generation; allocation concealment; or selective outcome reporting (based on growing empirical evidence that these three factors are the most important in influencing risk of bias) (Higgins 2011). We judged the overall risk of bias as low if we assessed these key domains as low risk of bias, unclear if we assessed one or more key domains as unclear risk of bias, and high if we assessed one or more key domains as high risk of bias.

For the assessment across studies, the main findings of the review have been set out in 'Summary of findings' (SoF) tables prepared using GRADE profiler software (GRADEpro 2008). We have listed the primary review outcomes for each comparison with estimates of relative effects, along with the number of participants and studies contributing data for those outcomes. For each individual outcome, we have assessed the certainty of the evidence using the GRADE approach (Balshem 2011), which involves consideration of limitations in design, inconsistency, indirectness, imprecision, publication bias, magnitude of the effect, dose-response effect and other plausible confounders. We have expressed the results as one of four levels of certainty (high, moderate, low or very low).

Measures of treatment effect

Dichotomous outcomes

For the included RCTs, we have recorded outcomes in each comparison group. Where possible we recorded or calculated risk ratios (RRs) for dichotomous outcomes. Where adjusted analyses were reported, we used estimates of effect from the primary analysis reported by the investigators and converted these to RRs, if possible.

Interrupted time series

We did not include any ITS studies. For a description of the methods we intended to use, see Appendix 1.

Continuous outcomes

For continuous outcomes, we have reported adjusted mean differences with 95% confidence intervals. We did not combine data from continuous outcomes. For a description of the methods we intended to use, see Appendix 1.

Studies reporting multiple measures of the same outcome

This issue did not arise for the studies included in this review. The methods we intended to use to manage this are described in Appendix 1.

Unit of analysis issues

Both included trials were cluster-randomised. Although the results of these studies were adjusted for clustering, Andersson 2009 did not report risk ratios or intracluster correlation coefficients (ICCs) and further analysis was therefore required to calculate these. As this trial provided data on the cluster level, a formal re-analysis was possible. For the outcome 'Proportion of children (12 to 23 months) reported to have received measles vaccine', we estimated the ICC as 0.25, and for the 'Proportion of children (12 to 23 months) reported to have received a full course of DPT (diphtheria, pertussis and tetanus) vaccine', we estimated the ICC as 0.14. We then used the more conservative ICC of 0.25 for re-analysis of the polio data from Andersson 2009 (for which insufficient information was available to calculate an ICC).

Dealing with missing data

We contacted the study authors where outcome data were unclear or not reported fully.

For all outcomes, we planned to carry out analysis, as far as possible, on an intention-to-treat basis. That is, we planned to include all participants randomised to each group in the analyses, and to analyse data according to initial group allocation irrespective of whether or not participants received, or complied with, the planned intervention. For the two studies included in the review, intention-to-treat analysis was not applicable as these were cluster-RCTs and the individual patient data were drawn from cross-sectional surveys of children's immunisation status.

When assessing adverse events, adhering to the principle of 'intention-to-treat' may be misleading. We therefore planned to relate the results to the treatment received. This means that for side effects, we planned to base the analyses on the participants who actually received treatment and the number of adverse events that were reported in the studies. We did not undertake analysis

of adverse events as neither of the included studies reported such data.

Assessment of heterogeneity

Since we did not combine data for any of the outcomes, assessment of heterogeneity is not possible. The method for how we intended to do this is described in Appendix 1.

Assessment of reporting biases

We had planned to generate funnel plots if more than 10 studies reported the same outcome of interest - see Appendix 1.

Data synthesis

We have presented the results from the included studies in 'Summary of findings' tables (see Higgins 2011, chapter 11), prepared using the GRADE profiler software (GRADEpro 2008). Since the review included study results that could not be pooled because the settings and/or interventions were too heterogeneous, we have described the results in a narrative form. We have included the narrative information in the 'Summary of findings' table.

For a description of how we had planned to combine and present an overall estimate of treatment effect if more than one study had examined similar interventions, see Appendix 1.

Subgroup analysis and investigation of heterogeneity

Subgroup analyses were not possible due to the small number of studies included in this review. The planned methods for subgroup analysis are described in Appendix 1.

Sensitivity analysis

As there was a small number of included studies and because meta-analysis was not conducted, it was not possible to carry out a sensitivity analysis to examine the effects of removing studies at overall high risk of bias across domains (based on 'Risk of bias' assessment within studies). As no individually randomised trials were included, we did not carry out a sensitivity analysis to examine the effects of removing data obtained from cluster-randomised trials from meta-analyses combining data from both individually and cluster-randomised trials.

Consumer participation

Those with an interest in this review include vaccine programme managers, policy-makers, practitioners and other community members (for example, parent interest groups, caregivers and family members of young children, teachers). The topic of this review was identified through a series of deliberative forums with stakeholders, as part of the 'Communicate to vaccinate 1' (COMMVAC 1) project (www.commvac.com). Reports of two of these deliberative forums are available on the COMMVAC website (see: http://www.commvac.com/publications.html#deliberative). In addition, in the peer review process we have liaised with the Cochrane Consumers and Communication Review Group to seek external referees reflecting the interests of relevant stakeholder groups.

RESULTS

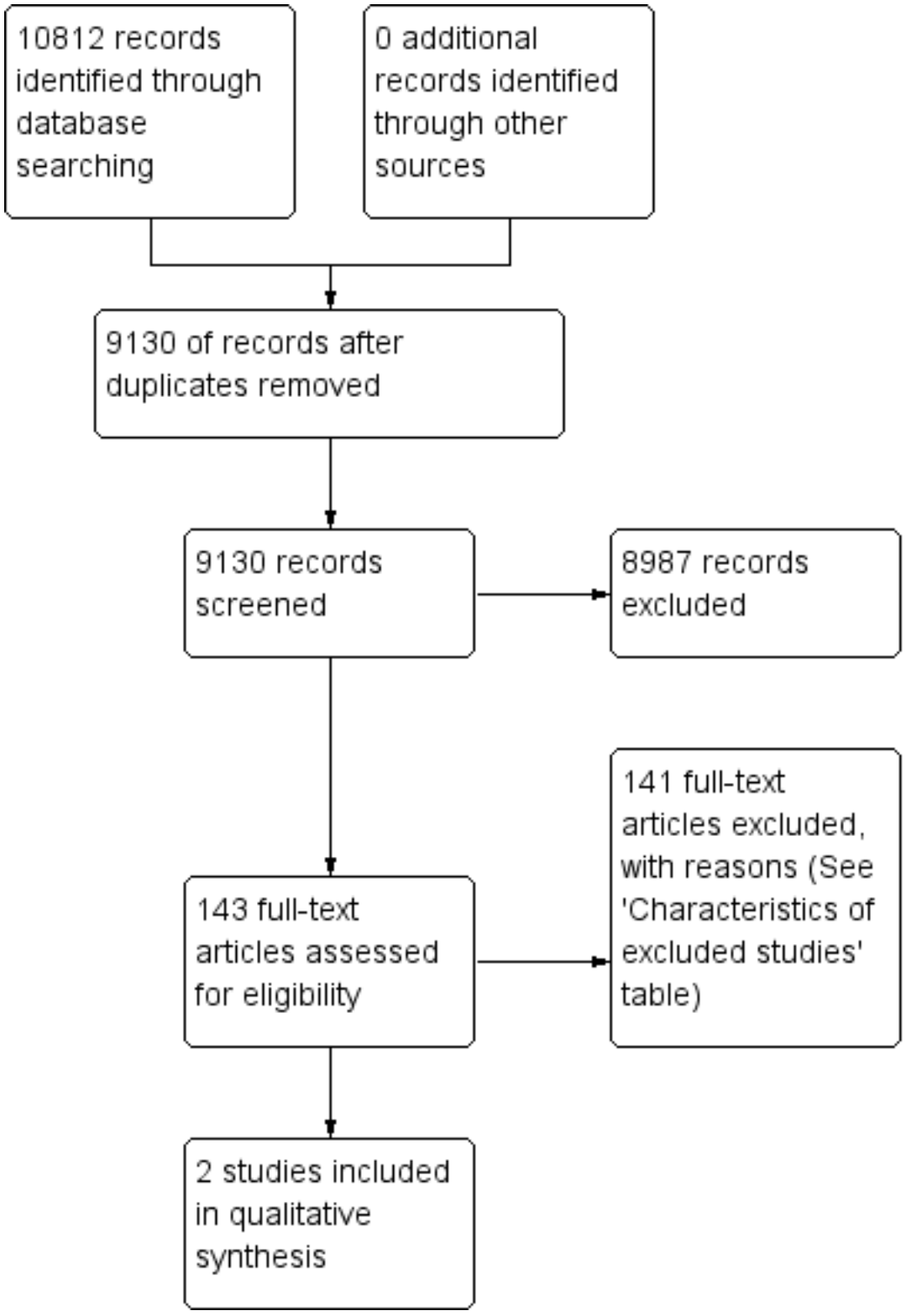
Description of studies

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

Results of the search

We identified a total of 9130 records from the electronic databases (see flow chart of study selection in Figure 1). Of these, we excluded 8987 references based on titles and abstracts and retrieved 143 references in full text and assessed them for eligibility. We included two studies.

Figure 1. Study flow diagram.



Included studies

Two cluster-randomised studies were included in this review (Andersson 2009; Pandey 2007): see Characteristics of included studies, which reports the numbers of participants who were assessed for the various outcomes and the details of the interventions delivered. Both studies compared interventions aimed at communities to inform and/or educate about early childhood vaccination with routine immunisation practices. We obtained additional data from the study authors for Pandey 2007.

Pandey 2007 involved 1050 households selected from 21 districts in the northern Indian state of Uttar Pradesh. At baseline, 46% of children in the control and intervention sites were immunised. Both low-, middle- and high-income households were included. Andersson 2009 involved 32 enumeration areas (including 5641 children) from a lower-middle-income district in Pakistan's Balochistan province. Each enumeration area included four or five villages. At baseline, measles vaccination rates among children (12 to 23 months) were 49% and 47% in the trial control and intervention clusters, respectively. For DPT (full schedule), they were 45% and 51%, respectively; and for polio vaccine in the last 12 months they were 100% and 99%, respectively.

In the Pandey 2007 study, the intervention consisted of information campaigns in each intervention cluster, conducted in two rounds separated by two weeks. Each round consisted of two to three meetings with each meeting lasting about one hour and consisting of a 15-minute audiotape presentation that was played twice and opportunities to ask questions. Posters and leaflets were also distributed in the intervention villages (Pandey 2007). The intervention in the Andersson 2009 study comprised three phases of discussions in each community with small community groups of 8 to 10 people. In the first phase, the community groups considered information about child vaccination in their area and why vaccination might be important. In the second phase, the groups discussed the costs and benefits of vaccination, including the complications related to vaccine-preventable illnesses and the adverse effects of vaccination. In the third phase, the groups considered the challenges to child vaccination in their settings and developed local action plans to address these, including ways to extend the discussions about vaccination to others in their community and ways to improve vaccination service access. Group participants were encouraged to share the information and continue the dialogue with households in their communities. The interventions were aimed at parents, other family members, village leaders, children and sometimes teachers (Pandey 2007) and, for Andersson 2009, at people selected because they were perceived to be trusted within their community and able to convince others.

We did not identify any studies that compared interventions aimed at communities to inform and/or educate and other interventions to promote immunisation uptake; or studies that compared these interventions with no intervention.

Excluded studies

We excluded 141 studies after screening the full texts (see Characteristics of excluded studies). The main reasons for exclusions were that the intervention or study design used did not meet our inclusion criteria.

Risk of bias in included studies

Assessments of risk of bias for the included studies are shown in the Characteristics of included studies table and are summarised in Figure 2 and Figure 3. We have reported risk of bias across all outcomes for each study as we assessed that the risk of bias did not differ significantly across outcomes within the studies. We judged both the included studies to be of unclear to low risk of bias, since they had low risk of bias for sequence generation; low risk of bias for allocation concealment; and low (Andersson 2009) or unclear (Pandey 2007) risk of bias for selective outcome reporting. These were the factors that we had determined a priori to be the most important in influencing overall risk of bias.

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

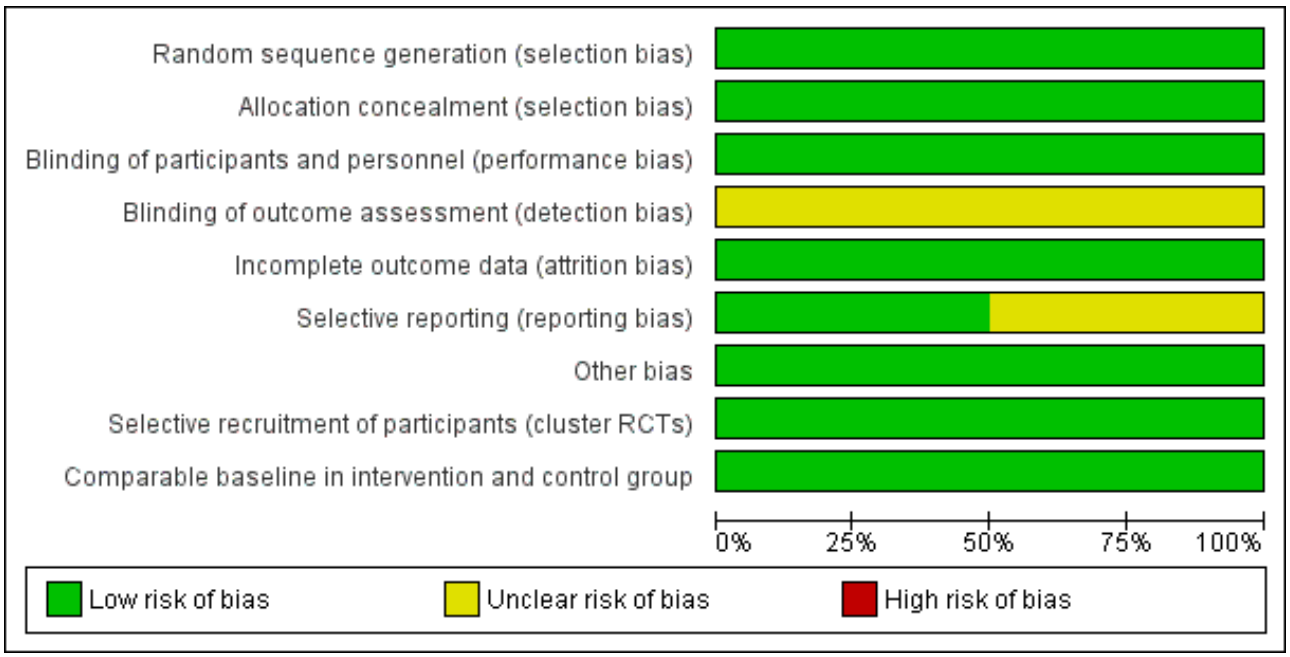
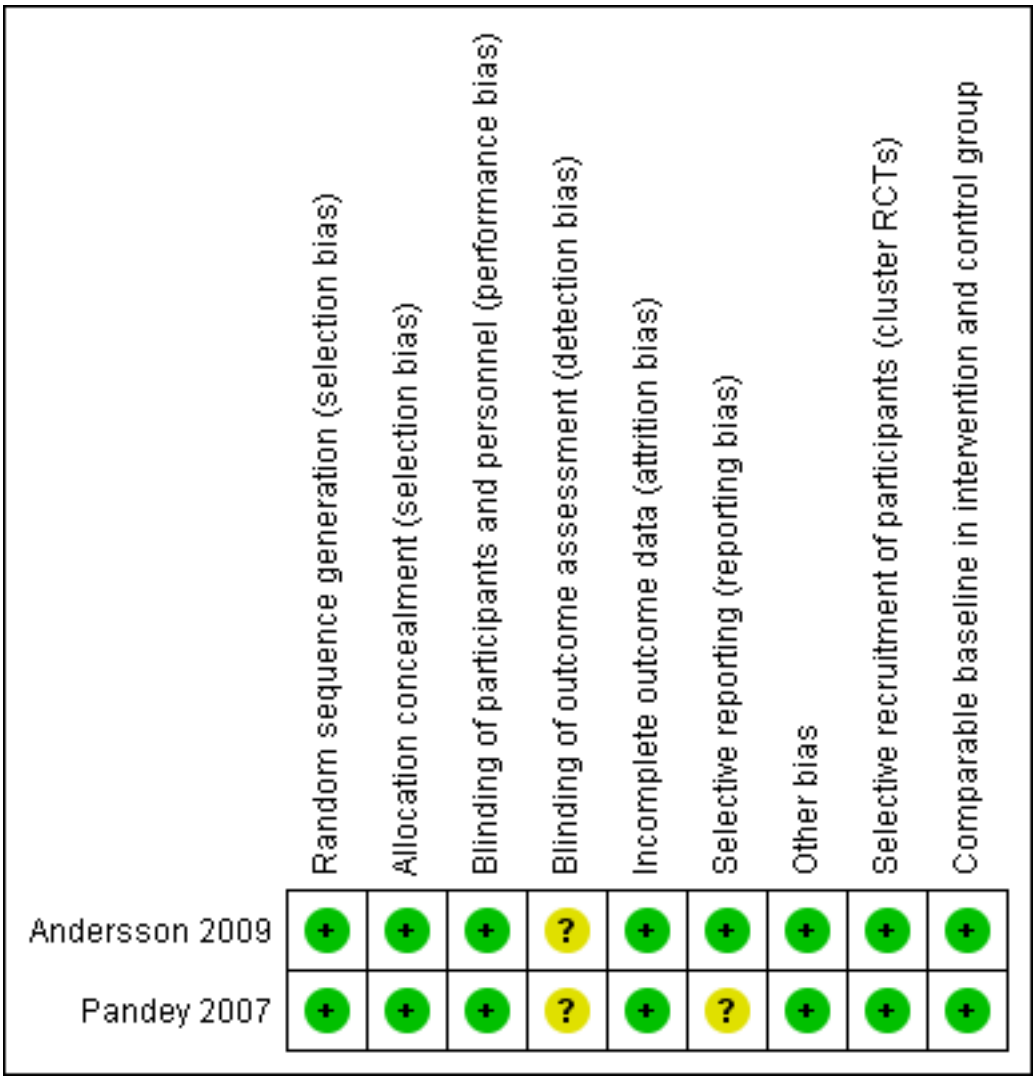


Figure 3. 'Risk of bias' summary: review authors' judgements about each risk of bias item for each included study.



Allocation

Both studies were at low risk of bias for random sequence generation. A random number generator was used to select communities for assignment to intervention and control groups. Allocation concealment was adequately described in one of the studies (Andersson 2009), but not mentioned in Pandey 2007.

Blinding

For these interventions, it was not possible to blind participants in the intervention clusters to receipt of the intervention. However, the clusters were spread geographically, so the risk of contamination between the clusters was probably low. In both of the included studies the field co-ordinator for the surveys knew which clusters had received the intervention but the interviewers did not. The follow-up interviews were performed by a research assistant who had no knowledge of the intervention. We assessed the studies to be at low risk of bias for performance bias, but unclear risk of bias for detection bias. We assess it as unlikely that it was possible to maintain the blinding of the people who performed the analysis.

Incomplete outcome data

We assessed the included studies to be at low risk for attrition bias. There was no loss of clusters in the Andersson 2009 trial and all loss of households in Pandey 2007 was accounted for by households having moved to another area prior to the final survey.

Selective reporting

We assessed Andersson 2009 as low risk as the published study protocol does not include any outcomes that were not assessed in the published trial report. For Pandey 2007, we were not able to identify a published protocol and were therefore not able to assess if all outcomes were reported. This domain was therefore assessed to be at unclear risk of bias.

Other potential sources of bias

We assessed that the trials were at low risk for other sources of bias.

- Recall bias: information regarding the vaccination was obtained by interview. However, since any recall bias should have influenced both arms of the trial, we assessed the risk of bias to be low.

- Selective recruitment of participants: as the study clusters were scattered geographically, it is unlikely that the participants knew which villages were control or intervention clusters. We therefore assessed this risk of bias to be low.
- Groups comparable at baseline: there was a slightly uneven distribution of low-caste versus mid-to-high-caste households in one of the studies (Pandey 2007). However, we assessed the risk of bias to be low because the baseline differences were small. Willingness to travel to vaccinate was higher in intervention than control cluster (P value = 0.009) in the other study (Andersson 2009), but this was adjusted for in the analysis and we assessed the risk of bias to be low.

Effects of interventions

See: **Summary of findings for the main comparison**

Comparison 1: Interventions aimed at communities to inform and/or educate about early childhood vaccination versus routine immunisation practices in the study setting

Two studies assessed interventions aimed at communities to inform and/or educate about early childhood vaccination, versus routine immunisation practices in the study setting (Andersson 2009; Pandey 2007).

Primary outcomes

Knowledge among participants of vaccines or vaccine-preventable diseases

One study reported results that we assessed as addressing knowledge among participants of vaccine or vaccine-preventable diseases (Andersson 2009). The outcome was measured by surveying whether respondents were aware of an illness preventable by vaccination. The trial suggested that the intervention may improve knowledge of vaccine-preventable diseases among intervention participants (adjusted mean difference 0.121, 95% confidence interval (CI) 0.055 to 0.189, low certainty evidence) at two years following the intervention. (Also see Table 2).

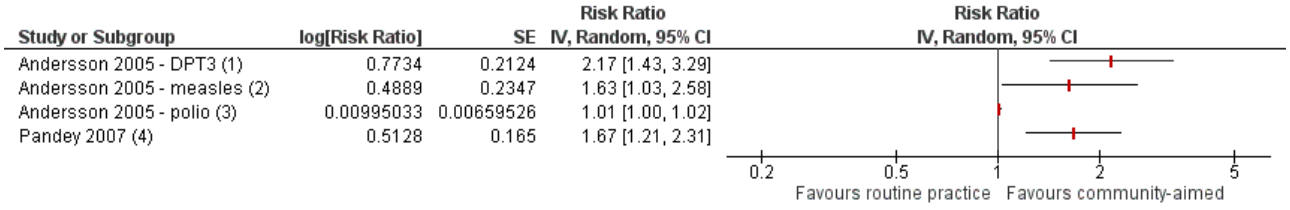
Knowledge among participants of vaccine service delivery

The included studies did not assess this outcome.

Immunisation status of child

Children's immunisation status was measured in both of the included studies. However, it was not possible to pool these results as the interventions were too different. Pandey 2007 found that the intervention probably increases the number of children who received one or more vaccinations, compared to the control group (risk ratio (RR) 1.67, 95% CI 1.21 to 2.31, moderate certainty evidence, Analysis 1.2). For Andersson 2009, the results indicate that the intervention probably increase the uptake of both measles and the full course of diptheria, pertussis and tetanus (DPT) vaccines (RR 1.63, 95% CI 1.03 to 2.58 for measles, Analysis 1.4; RR 2.17, 95% CI 1.43 to 3.29 for DPT, Analysis 1.6). For both, the evidence was of moderate certainty. The intervention may make little or no difference to the number of children who received polio vaccination in the last 12 months (RR 1.01, 95% CI 0.97 to 1.05, low certainty evidence, Analysis 1.8). For polio, this may be because vaccination rates for both intervention and control sites were very high at baseline (see Analysis 1.7). Figure 4 summarises these findings.

Figure 4. Forest plot of comparison: Interventions aimed at communities versus routine immunisation practices, outcome: Immunisation status of child.



Footnotes
(1) Reported to have received full course of DPT vaccine. Re-analysed based on numbers per cluster in Table 3 in the paper
(2) Reported to have received measles vaccine. Re-analysed based on numbers per cluster in Table 2 in the paper
(3) Reported to have received polio vaccination in the 12 months. Re-analysed based on overall numbers reported in the text of the paper
(4) Received >= 1 vaccination. Based on unpublished data, adjusted for district population, village cluster population, household caste, education

Any other measures of vaccination status in children

The included studies did not assess any other measures of vaccination status in children.

Unintended or adverse effects due to the intervention

None of the included studies reported any unintended or adverse effects due to the intervention.

Secondary outcomes

Participants' attitudes towards vaccination

One study reported results that we assessed to address participants' attitudes towards vaccination (Andersson 2009). The outcome was measured by surveying whether parents of children aged 9 to 60 months thought it was worthwhile to vaccinate children. The trial suggested that the intervention may change attitudes - in this group in favour of vaccination (adjusted mean difference 0.054, 95% CI 0.013 to 0.105, low certainty evidence), at two years following the intervention. (Also see Table 2).

Participant involvement in decision-making regarding vaccination

One study reported results that we assessed to address participant involvement in decision-making regarding vaccination (Andersson 2009). The outcome was measured by surveying whether mothers in the study sites in Pakistan were included in household decisions about childhood vaccination. The trial suggested that the intervention may make little or no difference to mothers' involvement in decision-making regarding vaccination (adjusted mean difference: 0.043 (95% CI -0.009 to 0.097), low certainty evidence), at two years following the intervention. (Also see Table 2).

Participant confidence in the decision made regarding vaccination

The included studies did not assess this outcome.

Resource use or cost of the intervention

The included studies did not assess this outcome. Some uncontrolled data on the costs of the interventions are reported in the Characteristics of included studies table.

Comparison 2: Interventions aimed at communities to inform and/or educate about early childhood vaccination versus interventions directed specifically to individual parents or caregivers of children

We did not identify any eligible studies that compared interventions aimed at communities to inform and/or educate about early childhood vaccination with interventions directed specifically to individual parents or caregivers of children.

Comparison 3: One community-aimed intervention to inform and/or educate about early childhood vaccination versus another community-aimed intervention to inform and/or educate

We did not identify any eligible studies that compared one community-aimed intervention to inform and/or educate about early childhood vaccination with another community-aimed intervention to inform and/or educate.

DISCUSSION

Summary of main results

The two randomised controlled trials (RCTs) identified by this review show low certainty evidence that interventions aimed at communities to inform and educate about childhood vaccination may improve knowledge of vaccine-preventable diseases and probably improve the immunisation status of children. The study in India showed that these interventions probably increase the number of children who received one or more vaccinations. The study in Pakistan showed that there is probably an increase in the uptake of both measles and diptheria, pertussis and tetanus (DPT) vaccines, and that there may be little or no difference in the number of children who received polio vaccine. There is also low certainty evidence that these interventions may change attitudes in favour of vaccination among parents with young children, but may make little or no difference to the involvement of mothers in household decision-making regarding childhood vaccination. The included studies did not assess the other review outcomes including knowledge among participants of vaccine service delivery; participant confidence in the decision made regarding vaccination; or any unintended adverse effects as a consequence of the intervention (see Summary of findings for the main comparison). The sparse data available for several outcomes indicate that further trials are needed.

Overall completeness and applicability of evidence

This review considered studies with a wide range of designs and is based on comprehensive searches, following the methods recommended by The Cochrane Collaboration and the Cochrane Consumers and Communication Review Group and without language or publication status restrictions. However, searches in this area are challenging for several reasons: firstly, there is no single term used in the literature to describe interventions aimed at communities to inform and educate about early childhood vaccination. These interventions encompass a wide range of different approaches and strategies, each of which may be indexed differently within the major medical databases. Secondly, studies are generally not indexed on the basis of the purpose of the intervention, i.e. to inform and educate. Thirdly, although filters have been developed to identify the range of study designs included in this review, these filters may not identify all relevant published studies. It is therefore possible that eligible studies were missed despite our efforts. Finally, it is also possible that we missed eligible non-randomised studies, published in the grey literature, of interventions aimed at communities. However, we undertook searches of the Grey Literature Report and Open Grey to attempt to identify such studies.

The review searched for RCTs, quasi-RCTs, controlled before-and-after (CBA) studies and interrupted time series (ITS) studies. We included this range of designs as randomisation may not be feasible for some interventions aimed at communities, such as those delivered through mass media. Such interventions may be best assessed using ITS studies. For interventions aimed at specific small groups in communities, such as women's groups, randomised approaches may be both feasible and desirable. Given the focus of this review on interventions aimed at communities, it is perhaps surprising that the two included studies were RCTs. Methodological work on the extent to which reviews on health systems questions identify non-randomised studies when their selection criteria include these suggests that this is variable, and may depend on whether the intervention addresses governance, financial or delivery arrangements (Glenton 2013). As non-randomised studies are believed to be at higher risk of bias and their inclusion entails a considerable effort, further work is needed on the types of questions for which these designs are likely to be used, including within the field of vaccination communication, and where they may add value to the evidence obtained from RCTs.

The two included studies evaluated quite similar interventions in which community meetings were used to disseminate vaccination information and build awareness of vaccination, although the Andersson 2009 intervention was more participatory in its design. We identified no eligible studies that used large-scale media such as billboards, newspaper, television, and radio to inform or educate or that used electronic media such as videos, slide shows, web-based programmes or virtual online communities. These delivery mechanisms are widely used in low-, middle- and high-income countries to inform and educate regarding childhood vaccination, and the absence of rigorous evaluations of these mechanisms is therefore an important gap. We also did not identify any studies addressing the following comparisons:

- interventions aimed at communities to inform and/or educate versus interventions directed specifically to individual parents or caregivers of children;
- one community-aimed intervention to inform and/or educate versus another community-aimed intervention to inform and/or educate.

It is therefore not possible to draw reliable conclusions regarding the relative effectiveness of these interventions compared to interventions using other strategies to inform and educate about childhood vaccination, or using other types of strategies (such as interventions to remind and recall) to increase knowledge of vaccination and childhood vaccination uptake. A companion review identified low certainty evidence that face-to-face interventions to inform or educate parents about childhood vaccination may have little to no impact on immunisation status, or knowledge or understanding of vaccination (Kaufman 2013). These review findings are discussed in more detail below. A recently published taxonomy of interventions to communicate about childhood vaccination provides a framework that can inform the development of both future trials and reviews in this field (Willis 2013).

The included studies did not assess several review outcomes: knowledge among participants of vaccine service delivery; participant confidence in the decision made regarding vaccination; any unintended adverse effects or harms as a consequence the intervention; and resource use or cost of the intervention. Only uncontrolled data on intervention costs were reported. Intermediate outcomes, such as participant confidence in the decision made regarding vaccination, are important to understanding the pathways between exposure to a communication intervention and a decision regarding childhood vaccination. Others have noted that inadequate assessment of intermediate outcomes is a common limitation of trials in the area of behaviour change (Kaufman 2013; Ryan 2011), making it difficult to understand how an intervention works or does not work. A focus on outcomes such as vaccination uptake may also act to undermine the importance of informed choice in relation to childhood vaccination. Outcomes that assess informed choice, such as confidence in the decision made, are considered important endpoints by many parents, caregivers and members of the public and are central to the principles of evidence-based practice (Austvoll-Dahlgren 2010; Coulter 2006; Dawes 2005; Stacey 2011).

The included trials also differed in the ways in which they assessed childhood immunisation status, making it challenging to pool these data. Greater standardisation of these assessments across trials of vaccination interventions would be helpful for future reviews, and the World Health Organization (WHO) monitoring standards may be useful in this regard (WHO 2014). Work on an outcome framework for vaccination communication interventions is also underway as part of the COMMVAC 2 project (http://www.commvac.com/).

Both included studies were conducted in middle-income countries in South Asia, and the findings may therefore be transferable to similar settings in South Asia or to other middle-income countries. As the study participants were also relatively poor, the findings may also be transferable to low-income countries. We outline below some of the factors that decision-makers need to consider in assessing whether the effects of interventions aimed at communities to inform and educate about childhood vaccination are likely to be transferable to other settings with different systems of health care (see Implications for practice).

Quality of the evidence

The Summary of findings for the main comparison summarises the certainty of the evidence for the following key outcomes:

- knowledge among participants of vaccine or vaccine-preventable disease;
- knowledge among participants of vaccine service delivery;
- immunisation status of the child;
- participants' attitudes towards vaccination;
- participants' involvement in decision-making regarding vaccination;
- participant confidence in the decision made regarding vaccination;
- unintended or adverse effects;
- resource use or cost of the intervention.

Using GRADE, we assessed the certainty of the evidence to be moderate to low for outcomes for which data were available. The reasons for these judgements are outlined in the Summary of findings for the main comparison. We assessed the two included trials as being at low risk of bias. However, there were sparse data for several outcomes indicating that further trials are needed.

Potential biases in the review process

Communication interventions are poorly indexed in electronic databases. To attempt to address this, we searched a large number of databases, including grey literature sources, using a broad range of search terms. There is also no widely accepted definition of 'intervention aimed at communities' or of the intervention purpose: to inform and educate about childhood vaccination. Our definition of 'community-aimed' was based on that developed for other reviews (Baker 2011). We also used a definition of 'inform and educate' included in a recently published taxonomy of vaccination communication interventions (Willis 2013). However, judgements were required in applying these definitions to identified studies. This is compounded by the fact that many studies do not describe adequately the interventions used. Together these issues may have made it difficult to identify all eligible studies.

A new taxonomy of communication interventions for vaccination, in which these interventions are organised by purpose, may help to provide standard language and terms both for describing these interventions in primary studies and for indexing these interventions in electronic databases (Willis 2013). This could facilitate searching in future review updates.

Agreements and disagreements with other studies or reviews

Our results differ somewhat from those of a companion Cochrane Review assessing the effects of face-to-face interventions for informing or educating parents about early childhood vaccination (Kaufman 2013). This companion review found low certainty evidence suggesting that face-to-face interventions to inform or educate parents about childhood vaccination may have little to no impact on immunisation status, or knowledge or understanding of vaccination. In contrast, our review suggests that interventions

aimed at communities for informing or educating about early childhood vaccination have mixed results: they may improve knowledge of vaccine-preventable diseases and probably lead to increased vaccination uptake. There is also low certainty evidence that these interventions may improve attitudes towards vaccination among intervention participants but may make to little or no difference to the involvement of mothers in decision-making regarding vaccination. However, this review identified only two studies and the evidence from both reviews is of moderate to low certainty, suggesting that there is a moderate to high likelihood that the effect will be substantially different from that found in the research (EPOC 2013). A third Cochrane Review of interventions to improve coverage of child immunisation in low- and middle-income countries is currently being updated (Oyo-Ita 2011). Discussion of the relationship to the results of that review will be addressed in a future update of this review.

Two recently published systematic reviews have explored vaccine hesitancy. One review examined interventions for reducing parental vaccine refusal and vaccine hesitancy and identified 17 studies on the impact of written educational information. Neither of the studies included in our review were included in this review. Many of the included interventions focused on human papillomavirus (HPV), and it is not clear how many of the interventions were aimed at communities to inform or educate regarding childhood vaccination. Overall, the effects of these interventions were mixed (Sadaf 2013).

A second systematic review focused on understanding the determinants of vaccine hesitancy in different settings and did not address the effects of interventions aimed at communities to inform and educate about early childhood vaccination (Larson 2014).

AUTHORS' CONCLUSIONS

Implications for practice

This review provides limited evidence to inform decisions regarding the implementation of interventions aimed at communities to inform and educate about early childhood vaccination. Some of these interventions, such as community meetings or some forms of mass media, may be resource intensive when implemented at scale and caution may therefore be needed. Such interventions may need to be targeted to areas or groups that have low childhood vaccination rates and therefore have the potential to benefit most. Other interventions, such as the use of electronic media directed to communities, may be less costly and possibly more feasible at scale. However, it is also important to consider that interventions aimed at communities may be cost-effective in some settings even if these interventions result in small increases in vaccination uptake, as the costs of non-vaccination are likely to be very high. The participatory approach used in the Andersson 2009 trial has parallels with that used in a series of trials of participatory women's groups to mobilise communities around maternal and newborn health (Azad 2010; Colbourn 2013; Manandhar 2004; Tripathy 2010). These trials, in which lay health workers facilitated the formation of the women's groups, showed important impacts on neonatal mortality (Azad 2010; Colbourn 2013; Lewin 2010; Manandhar 2004; Tripathy 2010), and perhaps reinforce the value of participatory approaches. Where such interventions directed by communities or aimed at communities are implemented, this should be in the context of rigorous evaluation so as to build the evidence base in this area (see Implications for research).

The two studies identified were conducted in quite similar settings, therefore it is difficult to assess the transferability of the review findings. Factors that need to be considered in assessing whether the effects of interventions aimed at communities to inform and educate about childhood vaccination are likely to be transferable to other settings with different systems of health care delivery include the following (Lavis 2009):

- Whether the studies from which the evidence was drawn were conducted in similar settings to that in which the implementation decision is being taken.
- Whether there are important differences in on-the-ground realities and constraints that might substantially alter the feasibility and acceptability of the intervention, compared to the sites in which the studies were done. For example, whether there are already high levels of knowledge regarding vaccination, its benefits and adverse effects and how to access vaccination services. Also whether there are sufficient resources to support the delivery of interventions aimed at communities (such as community meetings), including for transport and materials and to facilitate access to locations at which vaccination is available.
- Whether there are important differences in health system arrangements that may mean that these interventions could not work in the same way as in the sites in which the studies were conducted. For example, if there are no comparable community-based cadres to deliver these interventions; if there are important direct and indirect financial barriers to vaccination access; or if the organisation of primary care services does not facilitate the scaling up of communication interventions.
- Whether there are important differences in the baseline conditions between where the studies were done and the implementation setting. For example, if childhood vaccination rates (for some or all vaccines) are much higher than in the study settings, perhaps making it less cost-effective to use interventions aimed at communities, which may be fairly resource intensive.
- The availability of routine data on who might benefit from the intervention (for example, areas in which there are large numbers of children whose immunisation is not up to date). These data are needed to target these programmes towards the areas of greatest need.

The findings of this review must be considered alongside other relevant reviews in order to understand the best mix of interventions in different settings (see Table 1). A recently published taxonomy of communication interventions for childhood vaccination may assist decision-makers in considering the range of interventions that might be used to improve vaccination uptake (Willis 2013).

Implications for research

The implications for research are organised into key messages for trialists, systematic review authors and other researchers.

Trialists

Sparse or no data were available for the outcomes assessed in this review. Given the extensive use across many settings of interventions aimed at communities to inform and educate

about early childhood vaccination, it is surprising that so few rigorous evaluations have been conducted. Trials, or other rigorous evaluations, are needed of the following:

- interventions aimed at communities and delivered by different groups of people, such as health personnel, lay people, governmental institutions, civil society organisations and other non-governmental organisations;
- interventions aimed at communities and delivered via different mechanisms, including: printed materials such as brochures, pamphlets, posters or fact sheets; electronic media such as videos, slide shows, web-based programmes, virtual online communities or audio recordings; large-scale media such as billboards, newspaper, television and radio; and face-to-face communication with groups of people;
- community-aimed interventions delivered in different geographical settings.

In planning these trials, investigators should consult the recently published taxonomy of communication interventions for childhood vaccination (Willis 2013); consider how to assess vaccination status; include a logic model outlining the hypothesised pathway/s of the intervention effects (Anderson 2011; Burford 2013; Petticrew 2013), and also relevant intermediate outcomes, such as attitudes towards vaccination and participant confidence in the decision made regarding vaccination; carefully describe the different components of the intervention (and any co-interventions), their implementation (Burford 2013; Harper 2013; Shepperd 2009) and key elements of the implementation context; and assess possible harms or unintended consequences of the intervention.

Economic studies and process evaluations (Craig 2008; Lewin 2009; Oakley 2006) should also accompany trials to establish the cost-effectiveness of different interventions aimed at communities to inform and educate, and to better understand the factors affecting their successful implementation.

Systematic review authors

Further systematic reviews, including of studies of effects, process evaluations and economic evaluations, are needed on:

- people's views regarding the information they receive on childhood vaccination and on the types of information they would like to receive;
- the cost-effectiveness of interventions aimed at communities to inform and educate about early childhood vaccination;
- the effects of other types of communication interventions for childhood vaccination (Willis 2013).

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

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

Andersson 2009

Methods	Study design: cluster-randomised controlled trial Duration of study: baseline 2005, intervention delivered August 2006 to March 2007 Study arms: intervention in 18 enumerated areas, each with 4 or 5 villages, and including a total of 3166 children under 5 years. 14 control enumeration areas, each with 4/5 villages, and including a total 2475 children under 5 years. Total number of clusters randomised = 32. None of the clusters were lost to follow-up or withdrew from the trial Methods of recruitment of participants: a random number generator was used to allocate baseline communities to 18 intervention and 14 controls. Local men and women were recruited to lead and record the discussions in the intervention communities. The teams organised male and female groups in the 94 intervention villages (a total of 180 community groups, each of 8 to 10 people) to participate in the intervention Informed consent obtained: yes - field teams visited the community leaders to explain the purpose of the intervention and seek permission to work in the community Ethical approval: yes Funding: grant from the International Development Research Centre, Canada as part of the Canadian International Immunisation Initiative, Phase 2
Participants	Setting: Lasbela, one of the poorest districts in the Balochistan province of Pakistan, with limited access to health services. The language spoken was not indicated. In the trial control and intervention clusters, the baseline measles vaccination rates among children (12 to 23 months) were 49% and 47% respectively. For DPT (full schedule), they were 45% and 51% respectively; and for polio vaccine in the last 12 months they were 100% and 99% respectively Description of participants: • Discussion groups: people trusted within their communities • Outcomes: children aged 12 to 23 months (for vaccination outcomes) and the parents of children aged 9 to 60 months (for secondary outcomes) Number of participants: • The baseline survey on vaccination status included 538 children aged 12 to 23 months in the intervention communities and 373 in the control communities. The follow-up survey on vaccination status (measles) included 536 children aged 12 to 23 months in the intervention communities and 420 in the control communities. The follow-up survey on vaccination status (DPT) included 535 children aged 12 to 23 months in the intervention communities and 422 in the control communities. The follow-up survey on vaccination status (polio) included 530 children aged 12 to 23 months in the intervention communities and 422 in the control communities. The discrepancy in number of children in the control communities between baseline and follow-up is due to fuller access to one of the control communities in the follow-up survey

Andersson 2009 *(Continued)*

- The survey among parents of children aged 9 to 60 months included the following numbers of respondents (by outcome assessed):
  - Knowledge among participants of vaccine or vaccine-preventable disease: intervention communities = 3153; control communities = 2431
  - Participants' attitudes towards vaccination: intervention communities = 3161; control communities = 2475
  - Participants' involvement in decision-making regarding vaccination: intervention communities = 3131; control communities = 2434

Interventions	Aim of intervention: to facilitate informed discussion of childhood vaccination costs and benefits Deliverer: community members (women and men) from the study area Format or delivery mode: meetings of small (8 to 10 people) community groups. The groups consisted of people selected because they were perceived to be trusted within their community and able to convince others Content of communication: the intervention comprised 3 phases of discussions in each community with small community groups. In the first phase, the community groups considered information about child vaccination in their area and why vaccination might be important. In the second phase, the groups discussed the costs and benefits of vaccination, including the complications related to vaccine-preventable illnesses and the adverse effects of vaccination. In the third phase, the groups considered the challenges to child vaccination in their settings and developed local action plans to address these, including ways to extend the discussions about vaccination to others in their community and ways to improve vaccination service access. Group participants were encouraged to share the information and continue the dialogue with households in their communities. Vaccines delivered or described: the intervention focused on measles, but also measured DPT (diphtheria, pertussis and tetanus vaccine) and polio vaccine uptake Direction of communication: small group discussions led by trained community members. Those in the group discussions then took the information to the wider community Where the intervention took place: in communities - further details not provided Frequency or timing of communication: 3 phases of discussion (see above), sometimes with several meetings for each phase Training required for the intervention: those leading and recording the discussions received 2 to 3 days of training for each phase of the intervention. The training included both classroom sessions and field practice Theoretical basis for the intervention: utilised a behaviour change model or cascade (cascada) based on that developed to measure youth responses to risk. "[The] 'cascada' refers to conscious knowledge about immunisation and its side effects, attitudes to childhood immunisation, social norms (what neighbours do) and positive or negative deviation from those norms, intentions to change or to vaccinate in the future, agency (expectancy of self-efficacy or collective efficacy) and discussion about immunisation, its benefits and side effects. The outcome of this 'cascada' is the action, immunisation." Cost of the intervention: the direct cost of implementation of the intervention was estimated to be USD 63,600. This included the cost of 6 field teams undertaking the 3 phased discussions in 18 communities (94 villages), with a total of 180 community groups. Costs of the baseline and follow-up surveys were not included Intervention quality: "Local supervisors supported and monitored the work of the field teams and documented the outcome of the three phase discussions, using structured checklists and reporting formats. They visited the teams in the field, provided feedback, and assisted them to remedy any problems encountered with the intervention implementation." (Andersson 2009 pg 3) Fidelity/integrity of the intervention: not described Details of control/usual or routine care: usual care not described

Andersson 2009 *(Continued)*

	Details of co-interventions in all groups: "During the period of the intervention, the Lasbela government health department implemented a health education programme in the district, aiming to reach all communities, with messages particularly about household hygiene and prevention of diarrhoea in children. Both intervention and control communities received this health education programme, implemented mainly through lady health workers (LHW) and other local officers, who received specific training for this activity" (Andersson 2009 pg 3)
Outcomes	Primary trial outcome: • Uptake of measles and full DPT vaccination of 12- to 23-month old children, as reported by the main caregiver Secondary trial outcomes specified were the theory-based "cascada" of intermediate outcomes leading to vaccination uptake: • Conscious knowledge • Attitudes about vaccination • Subjective norms • Intention to change • Agency/self efficacy • Discussion within the household The baseline and follow-up questionnaire included questions about the vulnerability of the household and questions to mothers concerning their education, childcare knowledge, attitudes and practices Outcomes included in the review: uptake of measles, full DPT and polio vaccination of 12- to 23-month old children, as reported by the main caregiver, conscious knowledge, attitudes about vaccination and agency/self efficacy
Notes	Contact with the authors: we contacted the author to ask for further information regarding the secondary outcomes; if they were able to provide the data for these outcomes by cluster, for all intervention and control clusters. No additional data were received from the study authors

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	[All outcomes] Randomly selected 32 enumeration areas from the district population census. A random number generator allocated communities to 18 intervention and 14 control enumeration areas
Allocation concealment (selection bias)	Low risk	[All outcomes] The sequence was concealed and intervention assigned centrally
Blinding of participants and personnel (performance bias) All outcomes	Low risk	[All outcomes] Blinding not mentioned but this is a cluster trial so scored low risk. However, participants in the intervention district would know they were receiving intervention. The field co-ordinator for the surveys knew which clusters received the intervention but interviewers did not
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	[All outcomes] The field co-ordinator for the household surveys knew which clusters had received the intervention but interviewers did not. However, they did not evaluate the success of this blinding

Andersson 2009 *(Continued)*

Incomplete outcome data (attrition bias) All outcomes	Low risk	[All outcomes] No loss of clusters during this trial. Outcomes were assessed on cross-sections of the population so difficult to assess how many of those available at baseline were lost at follow-up
Selective reporting (reporting bias)	Low risk	[All outcomes] The published study protocol (Andersson 2005) does not include any outcomes that were not assessed in the published trial report
Other bias	Low risk	[All outcomes] Recall bias: used maternal report to assess measles and DPT vaccination status and these were not verified by vaccination card. Scored low as this may influence both arms of the trial
Selective recruitment of participants (cluster RCTs)	Low risk	[All outcomes] The district population is scattered so it unlikely the participants knew which villages were control or intervention clusters
Comparable baseline in intervention and control group	Low risk	[All outcomes] Willingness to travel to vaccinate was higher in intervention than control cluster (P value = 0.009) but this was adjusted for in the analysis

Pandey 2007

Methods	Study design: cluster-randomised controlled trial Duration of study: May 2004 to May 2005 Study arms: intervention arm (public meetings) + control arm (no intervention). 21 of 70 districts were the focus of the intervention. 1 district consist of proximately 14 blocks and each block consists of 65 village clusters Methods of recruitment of participants: using a random number generator, 1 block was randomly selected within each of the 21 districts, and then 5 villages were randomly selected from each block. No blocks were adjacent to each other. The 21 districts, and the selected blocks and villages, were then randomly assigned to either intervention or control arm. 10 households were sampled in each village of which 5 were low-caste and five were mid- to high-caste. In total 548 intervention households and 497 control households were included Informed consent obtained: yes, verbal consent of individual participants was obtained Ethical approval: yes Funding: financial support from Sahbhagi Shikshan Kendra (a non-governmental organisation based in Uttar Pradesh) and the World Bank
Participants	Setting: 21 central, central-eastern and southern districts out of the 70 districts in Uttar Pradesh, a State in Northern India with a population of 170 million. Uttar Pradesh is ranked 23 of 32 states in India in terms of the proportion of people living below the poverty line, with one living under the poverty line. Infant mortality rate is 89 per 1000. Literacy is 56% while 46% of children are immunised. The main language spoken is Hindi Description of participants:

Pandey 2007 *(Continued)*

- 21 districts were randomised to receive the intervention (11 districts) or to serve as control (10 districts)
- 10 households per village cluster that had at least 1 child going to public primary school in the village were selected for a baseline survey (550 households in the intervention group, 500 households in the control group). Of these households, 536 (246 low-caste, 290 mid- to high-caste) participated in the final survey and are included in the postintervention analysis. Of these households, 489 (241 low-caste, 280 mid- to high-caste) participated in the final survey and were included in the postintervention analysis. A household was defined as a group of persons who commonly lived together and would take their meals from a common kitchen
- Parents, other family members, village leaders, children and sometimes teachers attended the meetings. Approximately 14% to 25% of residents of the villages attended the meetings (additional information obtained from the study authors)

Number of participants:

The number of households with infants < 1 year was as follows:

- Baseline assessment: intervention = 171; control = 166
- Postintervention assessment: intervention = 149; control = 79

Interventions	Aim of the intervention: to support resource-poor populations through providing information about entitled health services, educational services and governance requirements Deliverer: project research assistants. No further information provided Format or delivery mode: information campaigns were conducted in 2 rounds for each cluster, separated by 2 weeks. Each round consisted of 2 to 3 meetings and also included the distribution of leaflets and posters in the intervention villages. Residents were informed in advance about the dates and locations of meetings and separate meetings were held in low and mid- to high-caste neighbourhoods. Each meeting lasted about an hour and consisted of the following: a 15-minute audiotape presentation that was played twice; opportunities to ask questions; and distribution of leaflets. People were informed that the information was obtained from the government and distributed in the public interest by the research team and a nongovernmental organisation based in Uttar Pradesh, Sahbhagi Shikstan Kendra Content of communication: information included health services information; availability of midwives; obligations of the midwife to provide free prenatal and postnatal care including tetanus vaccines and prenatal supplements for the mother and health care and vaccines for infants; the health centres available for more specialised care; and where to complain about quality or quantity of services. Information was also included on school fees; sources and oversight of education funds; obligations of oversight committees; requirements for semi-annual village government meetings; organisation and funding of village government and development work; rights to obtain copies of village records; and where to complain about education or village governance problems. The information in the presentation and leaflets was obtained from Uttar Pradesh health, education and village governance departments Vaccines delivered or described: infant vaccinations (not specified) and tetanus vaccination for pregnant women Direction of communication: from research assistants to community members. Community members had opportunities to ask questions Where the intervention took place: intervention communities. Separate meetings were held in low- and mid- to high-caste areas Frequency or timing of communication: 2 rounds of 2 to 3 meetings, separated by a period of 2 weeks Training required for the intervention: not described Theoretical basis for the intervention: not described Cost of the intervention: the total cost of the intervention was USD 4000 (approximately USD 0.22 per household in a village cluster)

Pandey 2007 *(Continued)*

	Intervention quality: to help ensure that the intervention was delivered in a uniform way, those delivering the information read a scripted introduction and were allowed to answer questions only to which the answers were already written on the information leaflets provided Fidelity/integrity of the intervention: "According to headcounts of everyone attending our informational meetings, 14% of the residents of the entire village cluster attended in round 1 and 11% attended in round 2. If there was some overlap in attendance, we estimate that 14% to 25% of the residents of each intervention village cluster attended a presentation. We reached our target level of attendance, which was 250 people in each round (about 11% of the average village population)" (Pandey 2007 pg 1870) Details of control/usual or routine care: not described Details of co-interventions in all groups: not described
Outcomes	• Visits by nurse wife; prenatal examinations, tetanus vaccinations and prenatal supplements received by pregnant women • Vaccinations received by infants • Excess school fees charged • Occurrence of village meetings • Development work in villages Outcomes included in the review: vaccinations received by infants
Notes	The total cost of the intervention was approximately USD 4000. This included the cost of designing the intervention (for example, a professional radio journalist was hired for the audio-recording of information played in the villages); printing materials; the tools and equipment (tape-recorders); and the cost of hiring the research team to carry out the campaign (personal communication) Contact with the authors: we contacted the author to ask for additional information regarding: (1) The intervention. This included further details related to vaccination and in what way vaccines were a part of the intervention and more information about how communities participated in the meetings. (2) The relative risk for the vaccination outcome, adjusted for clustering and other variables. Additional information on the intervention and this outcome was received from the study authors

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	[All outcomes] From a comprehensive list of blocks and village clusters, they used a random number generator to randomly select 1 block within each district and then randomly select 5 village clusters within each block. They then randomly assigned districts to intervention and control arms. The method of randomisation was not described
Allocation concealment (selection bias)	Low risk	[All outcomes] The unit of allocation was by cluster and allocation was performed on all units at the start of the study
Blinding of participants and personnel (performance bias) All outcomes	Low risk	[All outcomes] 5 village clusters of about 1000 in each district were selected. The total selection of 105 village clusters was spread over the 21 districts to minimise any potential for contamination between intervention and control villages. However, participants in the intervention district would have known they were receiving intervention. The field co-ordinator for the surveys knew which clusters received the intervention but interviewers did not. Participants in the intervention clusters would have known if they were receiving intervention

Pandey 2007 *(Continued)*

Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	[All outcomes] The follow-up interviews were performed by a research assistant who had no knowledge of the intervention. To maintain this blinding, intervention group subjects were not asked whether they attended an informational meeting. We assessed it as unlikely that it was possible to maintain the blinding, and we are not able to find information on blinding of the people that performed the analysis
Incomplete outcome data (attrition bias) All outcomes	Low risk	[All outcomes] 12 households in the intervention group and 8 in the control group moved before the final survey
Selective reporting (reporting bias)	Unclear risk	[All outcomes] We were not able to locate a published protocol to assess if all of the outcomes listed in the original protocol were reported. Results are reported for all of the main outcomes mentioned in the trial report
Other bias	Low risk	[All outcomes] Recall bias - information regarding vaccinations was obtained through interviews. We scored this as low risk of bias as it may influence both arms of the trial
Selective recruitment of participants (cluster RCTs)	Low risk	[All outcomes] The districts population were scattered (105 village clusters were spread over the 21 districts), so it is unlikely that the participants knew which villages were control or intervention clusters
Comparable baseline in intervention and control group	Low risk	[All outcomes] There was a slightly uneven distribution of low-caste versus mid- to high-caste households. Of 548 households in intervention village clusters, 252 (46%) were low-caste. Of 497 households in control village clusters, 245 (49%) were low-caste

DPT: diptheria, pertussis and tetanus

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

Study	Reason for exclusion
Abhyankar 2008	Intervention
Agboatwalla 1997	Population
Andrianarivelo 2001	Design
Anjum 2002	Intervention
Ansari 2007	Design/intervention
Aylward 2011	Design/intervention

Study	Reason for exclusion
Balraj 1986	Design
Barzgar 1997	Design
Belmaker 2006	Intervention
Berhane 1993	Intervention
Bhargava 1972	Intervention
Black 1981	Intervention/population
Bolivia study 1985	Intervention
Bollag 1979	Population
Bonu 2003	Design
Browngoehl 1997	Intervention
Bruneau 2001	Population
Budroni 1991	Population
Casas 2001	Intervention/population/design
Chandra 1992	Intervention
Chen 2012	Population
Chongsuvivatwong 1993	Intervention
Cliff 1984	Design
Cockman 2011	Intervention
Cui 2009	Population
Dammann 1990	Intervention
Davis 1998	Population
de Nuncio 1999	Design
Devadas 1983	Design
Devedas 1994	Design
Dini 2000	Intervention
Donovan 2000	Intervention
Dutta 1989	Design
Dyer 1996	Design

Study	Reason for exclusion
Ekerete 1997	Design
Elkharrat 1999	Population
Estrella 2001	Full text not in file
Euler 2003	Intervention
Fairhead 2006	Design
Ferson 1995	Intervention
Fischer 1995	Design
Fu 2012	Design
Gateff 1968	Full text not in file
Gilca 2006	Intervention
Glogowska-Ligus 2011	Population
Goel 2012	Design
Gold 1994	Design
Guimaraes 2009	Design
Gutierrez 1996	Intervention
Haelterman 1996	Design
Hamkar 2006	Design
Holzman 2005	Population
Hong 2005	Design
Igarashi 2010	Intervention
Jackson 2010	Design /intervention
Jackson 2011	Intervention
Johnson 2000	Intervention
Jones 1980	Population
Joo 2001	Design
Kar 1968	Design
Kavanagh 2011	Design
Khanom 1983	Design

Study	Reason for exclusion
Koehlmoos 2011	Design
Kowli 1990	Unable to assess article
Lahariya 2007	Design
Leiner 2004	Intervention
Lin 1971	Design
Lindegger 2007	Design
Linkins 1994	Intervention
Linkins 1995	Design
Luo 2009	Design
Macdonald 1985	Design
Maher 1993	Design
Main 2001	Design
Majdzadeh 2008	Design
Mann 1972	Design
Marchand 1992	Design
Martinez-Campillo 2003	Design
Mason 2000	Design
Mason 2000b	Intervention
Massoudi 1999	Intervention
Mathur 1979	Intervention
Mayer 1999	Intervention
McBean 1976	Design
McPhee 2003b	Design
Meegan 2001	Intervention
Mexico study 1994	Design
Morgan 1998	Intervention
Movahedi 2008	Design
Muhuri 1995	Design/study aim

Study	Reason for exclusion
Nanyunja 2003	Design
Niederhauser 1999	Full text not in file
Nuwaha 2000	Intervention
Nwogu 2008	Intervention
O'Mahony 1986	Population
Oche 2011	Design
Odusanya 2003	Design
Oeffinger 1992	Intervention
Oliphant 2010	Intervention
Painvin 2011	Population
Pallasch 2005a	Unable to assess article
Pallasch 2005b	Duplicate of Pallasch 2005a
Paunio 1991	Intervention
Peng 2012	Design
Perdue 1955	Design
Phommathansy 2002	Full text not in file
Pietsch 2002	Full text not in file
Porter 2000	Design
Porter-Jones 2009	Intervention
Przewlocka 2000	Design
Quaiyum 1997	Design
Rahman 1988	Design/intervention
Rajakumar 2010	Design/intervention
Rao 1974	Design
Reichler 1997	Design
Ryman 2011	Intervention
Salmond 1994	Intervention
Schwarz 2008	Population

Study	Reason for exclusion
Shaikh 2003	Design
Shamma 1970	Intervention
Sheikh 2009	Population
Shenson 2001	Population
Shevlin 2002	Intervention
Smith 1999	Intervention
Sokhey 1985	Design
Sudan study 1995	Full text not in file
Sultana 2008	Design
Swift 1969	Design
Tandon 1992	Intervention
Teberg 1970	Design/intervention
Thomas 2008	Intervention
Thompson 2009	Design
Tung 2005	Intervention/population
Usman 2011	Population
Vijayaraghavan 1983	Design
Waisbord 2010	Design
Wallace 2006	Intervention
Wang 2007	Intervention
Waterman 1996	Design
White 1976	Design
WHO 1986	Design
Zajicek-Farber 2010	Intervention
Zimicki 1994	Design
Zuber 2001	Intervention

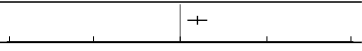
DATA AND ANALYSES

Comparison 1. Interventions aimed at communities versus no intervention

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Infant received ≥ 1 vaccination_unadjusted	1		Risk Ratio (IV, Random, 95% CI)	Totals not selected
2 Infant received ≥ 1 vaccination_adjusted for clustering and other variables_additional data from study authors	1		Risk Ratio (Random, 95% CI)	Totals not selected
3 Child received measles vaccine_unadjusted	1		Risk Ratio (IV, Random, 95% CI)	Totals not selected
4 Child received measles vaccine_adjusted for clustering	1		Risk Ratio (Random, 95% CI)	Totals not selected
5 Child received full course of DPT vaccine_unadjusted	1		Risk Ratio (IV, Random, 95% CI)	Totals not selected
6 Child received full course of DPT vaccine_adjusted for clustering	1		Risk Ratio (Random, 95% CI)	Totals not selected
7 Child received polio vaccination in the last 12 months_unadjusted	1		Risk Ratio (IV, Random, 95% CI)	Totals not selected
8 Child received polio vaccination in the last 12 months_adjusted for clustering	1		Risk Ratio (Random, 95% CI)	Totals not selected

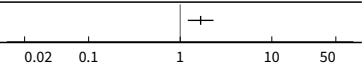
Analysis 1.1. Comparison 1 Interventions aimed at communities versus no intervention, Outcome 1 Infant received ≥ 1 vaccination_unadjusted.

Study or subgroup	Communication n/N	Control n/N	Risk Ratio IV, Random, 95% CI	Risk Ratio IV, Random, 95% CI
Pandey 2007	107/149	36/79		1.58[1.21,2.05]



Analysis 1.2. Comparison 1 Interventions aimed at communities versus no intervention, Outcome 2 Infant received ≥ 1 vaccination_adjusted for clustering and other variables_additional data from study authors.

Study or subgroup	Experimental N	Control N	log[Risk Ratio] (SE)	Risk Ratio IV, Random, 95% CI	Risk Ratio IV, Random, 95% CI
Pandey 2007	0	0	0.5 (0.165)		1.67[1.21,2.31]



Analysis 1.3. Comparison 1 Interventions aimed at communities versus no intervention, Outcome 3 Child received measles vaccine_unadjusted.

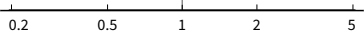
Study or subgroup	Communication n/N	Control n/N	Risk Ratio IV, Random, 95% CI	Risk Ratio IV, Random, 95% CI
Andersson 2009	283/536	136/420		1.63[1.39,1.91]

Analysis 1.4. Comparison 1 Interventions aimed at communities versus no intervention, Outcome 4 Child received measles vaccine_adjusted for clustering.

Study or subgroup	Communication N	Control N	log[Risk Ratio] (SE)	Risk Ratio IV, Random, 95% CI	Risk Ratio IV, Random, 95% CI
Andersson 2009	536	420	0.5 (0.235)		1.63[1.03,2.58]

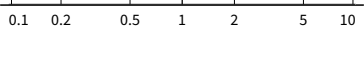
Analysis 1.5. Comparison 1 Interventions aimed at communities versus no intervention, Outcome 5 Child received full course of DPT vaccine_unadjusted.

Study or subgroup	Communication n/N	Control n/N	Risk Ratio IV, Random, 95% CI	Risk Ratio IV, Random, 95% CI
Andersson 2009	283/535	103/422		2.17[1.8,2.61]



Analysis 1.6. Comparison 1 Interventions aimed at communities versus no intervention, Outcome 6 Child received full course of DPT vaccine_adjusted for clustering.

Study or subgroup	Communication N	Control N	log[Risk Ratio] (SE)	Risk Ratio IV, Random, 95% CI	Risk Ratio IV, Random, 95% CI
Andersson 2009	535	422	0.8 (0.212)		2.17[1.43,3.29]



Analysis 1.7. Comparison 1 Interventions aimed at communities versus no intervention, Outcome 7 Child received polio vaccination in the last 12 months_unadjusted.

Study or subgroup	Communication n/N	Control n/N	Risk Ratio IV, Random, 95% CI	Risk Ratio IV, Random, 95% CI
Andersson 2009	524/530	415/422		1.01[0.99,1.02]

Analysis 1.8. Comparison 1 Interventions aimed at communities versus no intervention, Outcome 8 Child received polio vaccination in the last 12 months_adjusted for clustering.

Study or subgroup	Experimental N	Control N	log[Risk Ratio] (SE)	Risk Ratio IV, Random, 95% CI	Risk Ratio IV, Random, 95% CI
Andersson 2009	0	0	0 (0.022)		1.01[0.97,1.05]
			Favours control	1	Favours communication

ADDITIONAL TABLES

Table 1. Comparison between this review and other reviews on related topics

Review citation	Focus of cited review	Comparison with our review
Briss 2000	This review considers the effects of population-based interventions to improve vaccination coverage in children, adolescents and adults	Briss 2000 only includes studies from industrialised settings and studies published up to 1997, although it includes a wider scope of interventions than our review. Our review includes studies conducted in any setting and focusing on children, and updates findings from the Briss review for this range of interventions
Grilli 2002	This review assesses the effect of mass media intervention on the utilisation of health services. 20 studies were included in the review; 2 were relevant to vaccination	Our review only includes mass media interventions focused on vaccination and not those focusing on other health services or issues Grilli 2002 has not been updated since 2001
Stone 2002	This review assesses the effects of interventions to increase the use of adult immunisation	Our review focuses on immunisation in children only
Maglione 2002	This reviews assesses the effects of mass mailings designed to increase utilisation of influenza vaccine among Medicare beneficiaries in the USA	Our review focuses on immunisation in children only
Jacobson 2005	This review assesses the effectiveness of patient reminder and recall systems to improve immunisation rates, and compares the effects of various types of reminders in different settings or patient populations	Our review excludes reminder and recall systems where there is no information and/or education component or purpose
Lewin 2010	This review assesses the effects of lay health worker interventions on maternal and child health and the management of infectious diseases. 82 trials are included in the review; 8 are potentially relevant to vaccination. 7 of these deal with childhood vaccination	Our review is not limited to interventions delivered by lay health workers. Any childhood immunisation interventions included in the Lewin 2010 review and that were also aimed at communities were considered for inclusion in this review
Glenton 2011	This review assesses the effects of lay health worker interventions on the uptake of childhood immunisation and develops a typology of intervention models	Our review is not limited to lay health worker interventions
Oyo-Ita 2011	This review evaluates the effectiveness of strategies to increase childhood vaccination rates in low- and middle-income countries. 6 studies are	This review only includes studies conducted in low- and middle-income countries. Our review includes studies conducted in any location

Table 1. Comparison between this review and other reviews on related topics *(Continued)*

	included in the review. 4 involve some form of communication with parents or communities	
Williams 2011	This review assesses the effectiveness of strategies to improve childhood immunisation uptake in primary care settings in developed countries. Strategies may be directed to consumers or practitioners and include remind or recall interventions, education, parent-held records and feedback	The studies included in this review were conducted in high-income countries only and in primary care settings, while the scope of our review includes all locations and settings
Cairns 2012	This review examined evidence on the effectiveness of European promotional communications for national immunisation schedule vaccinations. The review aimed to: describe the types of promotional communication that have been used; assess the quality of the evaluations these promotional communication interventions; and assess the applicability of this evidence to immunisation policy, strategy and practice priorities in Europe	Cairns 2012 considered immunisation in adults, adolescents and children and included studies conducted in a European country and evaluating a promotional communication intervention. Our review focuses on community-directed interventions to inform or educate about childhood vaccination only and also includes studies from any setting. None of the studies in Cairns 2012 that focused on childhood vaccination and evaluated interventions aimed at communities were eligible for inclusion in our review
Kaufman 2013	A companion COMMVAC review focused on face-to-face interventions directed at parents	Our review includes interventions which target community members (the general public), including, for example, parents and other caregivers and family members of young children, community leaders, teachers, health personnel (as part of a wider community intervention), and other influential community members We excluded interventions that targeted individuals directly and were not aimed at communities - these interventions are considered in the Kaufman review
Sadaf 2013	This review assessed the evidence on interventions to decrease parental vaccine refusal and hesitancy toward recommended childhood and adolescent vaccines	Sadaf 2013 includes a wider scope of interventions and study designs than our review and also included interventions focused on adolescents and young adults. The review does not specifically address the effects of interventions aimed at communities and does not include any studies that were eligible for inclusion in our review
Dubé 2013	This review considers the possible causes of vaccine hesitancy in low- and middle-income countries and the determinants of individual decision-making about vaccination	This review did not focus on the effects of interventions to inform or educate about early childhood vaccination
Larson 2014	This review aimed to: 1) identify research on vaccine hesitancy; 2) identify determinants of vaccine hesitancy in different settings; and 3) inform the development of a model for assessing determinants of vaccine hesitancy in different settings	This review did not focus on the effects of interventions to inform or educate about early childhood vaccination

Table 2. Data table for knowledge among participants of vaccine or vaccine-preventable diseases, participants' attitudes towards vaccination and participant involvement in decision-making regarding vaccination[1]

Outcome	Intervention clusters: number of parents (mean)	Control clusters: number of parents (mean)	Adjusted mean difference[2]
Respondents were aware of an illness preventable by vaccination (knowledge)	2368/3153 (mean 0.74)	1437/2431 (mean 0.58)	0.121 (95% CI 0.06 to 0.19)
Respondents thought it was worthwhile to vaccinate children (attitudes)	3006/3161 (mean 0.95)	2116/2475 (mean 0.84)	0.054 (95% CI 0.01 to 0.11)
Mothers included in decisions about vaccination (involvement)	1834/3131 (mean 0.59)	1345/2434 (mean 0.54)	0.043 (95% CI -0.01 to 0.1)

[1]From: Andersson 2009.
[2]Adjusted for baseline differences.
CI: confidence interval

APPENDICES

Appendix 1. Methods that could not be implemented for this version of the review

This appendix includes text from the methods section of the original protocol for this review (Saeterdal 2012). Due to the small number of included studies and their characteristics, these parts of the methods section were not relevant for this review. However, these methods are described below as they may be relevant when updating the review.

Assessment of risk of bias in included studies: CBAs and ITS studies

For CBAs we will also assess whether the intervention and control groups were comparable at baseline, as part of the assessment of other sources of bias (Ryan 2011).

For ITS studies we will assess the following risk of bias domains (Ryan 2011): the extent to which the intervention was independent of other changes; whether the shape of the intervention effect was pre-specified; whether the intervention was likely to affect data collection; blinding (participants and personnel); blinding (outcome assessment); completeness of outcome data; selective outcome reporting; and any other sources of bias.

Measures of treatment effect

Interrupted time series

For ITS studies we will record changes in level and in slope. If papers with ITS design do not provide an appropriate analysis or reporting of results, but present the data points in a graph or in a table that can be scanned, we will re-analyse the data using methods described in Ramsay 2003.

Continuous outcomes

For continuous outcomes, the effect size will be expressed as mean differences (MDs) with standard deviations if outcomes are measured in the same way between studies. If some studies have reported endpoint data and others have reported change from baseline data (with errors), we will combine these in the meta-analysis if the outcomes are reported using the same scale (Higgins 2011). We will use standardised mean difference (SMD) with 95% confidence intervals (CIs) to combine data from trials that measure the same outcome but use different scales. We will standardise the data to their effect size by dividing the estimated mean difference by its standard deviation.

For CBA studies, we will use difference in differences between pre- and post-observation in intervention and control group.

Studies reporting multiple measures of the same outcome

When a single study uses two separate methods to measure the same outcome (e.g. two measures of knowledge among participants), or measures two different outcomes that could be considered part of the same outcome category (e.g. beliefs about vaccination and views

regarding vaccination, which both fall under 'attitudes of participants towards vaccination'), we will adopt the approach to measures of treatment effect as outlined by Brennan and colleagues (Brennan 2009):

1. Select the primary outcome identified by the study authors that correlates to our stated outcomes of interest.
2. If no primary outcome is specified, select the one specified in the sample size calculation.
3. If no sample size calculations are reported, we will rank the reported effect estimates and select the outcome with the median effect estimate. When there is an even number of outcomes, we will include the outcome whose effect estimate is ranked n/2, where n is the number of outcomes.

Assessment of heterogeneity

We will consider whether there is substantive heterogeneity of settings, interventions or outcomes among the included studies. We will examine the forest plots from the meta-analyses to visually assess the levels of heterogeneity (in terms of the size or direction of treatment effect and by looking at the overlap between confidence intervals around the treatment effect estimate for each included study). We will employ the Chi^2 test to assess whether observed differences in results across studies are compatible with chance alone. When the observed intervention effects are more different from each other than one would expect due to chance alone, we will assume that the studies have 'clinical' and/or statistical heterogeneity. We will use the I^2 statistic to quantify the level of statistical heterogeneity among the trials in each analysis. If we identify substantial or considerable heterogeneity (approximately I^2 = 50% to 100%) we will note this in the text and explore this heterogeneity through the prespecified subgroup analyses (see 'Subgroup analysis and investigation of heterogeneity').

We will use caution in the interpretation of those meta-analysis results with high levels of unexplained heterogeneity.

Assessment of reporting biases

We will generate funnel plots using the Review Manager software (RevMan 2012) and visually examine them for asymmetry if more than 10 studies reporting the same outcome of interest are available.

Data synthesis

We will carry out meta-analysis to provide an overall estimate of treatment effect when more than one study examines similar interventions, provided that: studies use similar methods; studies are homogeneous when it comes to setting; and studies measure the same outcome in similar ways in comparable populations. We will carry out the statistical analysis using Review Manager software (RevMan 2012). We will not combine results from randomised and quasi-randomised trials together in meta-analysis, nor will we present pooled estimates for quasi-randomised studies with different types of study designs.

Evidence on different interventions may be available from different types of studies (for example, it is likely that data from interventions delivered through mass media, such as newspapers or radio, will be reported in quasi-randomised studies). Where there is evidence on a particular outcome from both randomised trials and quasi-randomised studies, we will use the evidence from trials which are at lower risk of bias to estimate treatment effect.

We will use a random-effects meta-analysis for combining data, as we anticipate that there may be natural heterogeneity between studies attributable to the different interventions, populations and implementation strategies.

For continuous variables we will use the inverse variance method while for dichotomous variables we will use the method proposed by Mantel-Haenszel. If cluster-randomised trials are included we will use the generic inverse variance method in RevMan 2012 for meta-analysis. For quasi-randomised studies, where results have been adjusted to take account of possible confounding factors, we will use the generic inverse variance method in RevMan 2012 to carry out any meta-analysis. If both adjusted and non-adjusted figures are provided we will carry out a sensitivity analysis using the unadjusted figures to examine any possible impact on the estimate of treatment effect.

For ITS and repeated measures studies, the preferred analysis method is either a regression analysis with time trends before and after the intervention, adjusted for autocorrelation and any periodic changes, or auto regressive integrated moving average (ARIMA) analysis. We will attempt to present the results for outcomes as changes along two dimensions: change in level and change in slope. Change in level is the immediate effect of the policy and is measured as the difference between the fitted value for the first post intervention data point (one month after the intervention) minus the predicted outcome one month after the intervention, based on the pre-intervention slope only. Change in slope is the change in the trend from pre to post intervention, reflecting the 'long-term' effect of the intervention. Since the interpretation of change in slope can be difficult, we will present the long-term effects similarly to the way we propose to calculate and present the immediate effects. We will present the effects after half a year as the difference between the fitted value for the sixth month post intervention data point (half a year after the intervention) minus the predicted outcome six months after the intervention based on the pre-intervention slope only. The effects after one year and two years, if available, will be measured similarly. Where studies report a transition phase, we will exclude these data.

If papers with CBA design do not provide an appropriate analysis or reporting of results, but present the data for each district/region in the intervention and control groups respectively, for dichotomous outcomes we will re-analyse the data using a generalised linear model to calculate adjusted RR.

We will use the generic inverse variance method for combining the data in a meta-analysis for ITS and CBA studies.

We will present the results from the meta-analysis in 'Summary of findings' tables (see Higgins 2011, chapter 11) prepared using GRADE profiler software (GRADEpro 2008). If the review includes study results that cannot be pooled because the settings and/or interventions are too heterogeneous, we will describe the results in a narrative form. We will include the narrative information in the 'Summary of findings' table.

Subgroup analysis and investigation of heterogeneity

Where data are available we will carry out the following subgroup analyses:

- By baseline vaccination status (0% to 50%; 51% to 80%; and 81% to 100% vaccination coverage).
- By types of delivery mechanisms (mass media, electronic media, face-to-face, single versus multi-component interventions).
- By the target group/s of the intervention (community leaders, teachers, health personnel, the general public).

This review is global in scope but arose from a project with a LMIC focus, so in preparing the review we considered whether the country in which the intervention was delivered would change the effect of the intervention. Consultation indicated that there is insufficient empirical evidence at present to suggest a setting-based variation in effect. Given that the knowledge and beliefs of parents and other key stakeholders affect vaccination coverage around the world, and that the delivery of information is easily adapted to local settings, we believe that there are not likely to be differences in effect that would justify subgroup analysis based on country income level.

We will use only the primary outcomes in subgroup analyses and limit these analyses to those outcomes for which three or more trials contributed data. We will examine differences between subgroups by visual inspection of the subgroups' CIs; with non-overlapping CIs suggesting a statistically significant difference in treatment effect between the subgroups. We will test for subgroup differences as described by Borenstein 2008 and implemented in RevMan 2012.

Appendix 2. Search strategies

OVID databases

1. Ovid MEDLINE(R), Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid OLDMEDLINE(R) 1946 to present (search result for 3 June 2012).
2. EMBASE Classic+EMBASE 1947 to 3July 2012 (search result for 7 July 2012).
3. Global Health 1910 to June 2012 (search result for 7 July 2012).
4. PsycINFO 1806 to July Week 1 2012 (search result for 7 July 2012).

MEDLINE

1. Immunization/

2. Immunization Schedule/

3. Immunization, Secondary/

4. Immunotherapy, Active/

5. Mass Immunization/

6. Immunization Programs/

7. Vaccination/

8. (vaccinat$ or revaccinat$ or immuniz$ or immunis$ or immunother$ or inoculat$ or innoculat* or prophyla*).tw.

9. or/1-8

10. Tetanus Toxoid/

11. Diphtheria Toxoid/

12. Diphtheria-Tetanus-Acellular Pertussis Vaccines/

13. Diphtheria-Tetanus-Pertussis Vaccine/

14. Diphtheria-Tetanus Vaccine/

15. Pertussis Vaccine/

16. Measles-Mumps-Rubella Vaccine/

17. Measles Vaccine/

18. Mumps Vaccine/

19. Rubella Vaccine/

20. Poliovirus Vaccines/

21. Poliovirus Vaccine, Inactivated/

22. Poliovirus Vaccine, Oral/

23. Tuberculosis Vaccines/

24. BCG Vaccine/

25. Viral Hepatitis Vaccines/

26. Hepatitis B Vaccines/

27. Haemophilus Vaccines/

28. Pneumococcal Vaccines/

29. Meningococcal Vaccines/

30. Rotavirus Vaccines/

31. Japanese Encephalitis Vaccine/

32. Yellow Fever Vaccine/

33. ((tetanus or diphtheria) adj toxoid).tw.

34. ((tetanus or diphtheria? or pertussis or whooping cough or measles or mumps or rubella? or rubeola or mmr or polio$ or tuberculosis or tuberculoses or bcg or calmette$ or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$) adj vaccin$).tw.

35. or/10-34

36. Tetanus/

37. Diphtheria/

38. Measles/

39. Mumps/

40. Rubella/

41. Whooping Cough/

42. Poliomyelitis/

43. Poliomyelitis, Bulbar/

44. Tuberculosis/

45. Tuberculosis, Pulmonary/

46. Mycobacterium Tuberculosis/

47. Hepatitis B/

48. Hepatitis B, Chronic/

49. Haemophilus Influenzae/

50. Haemophilus Influenzae Type B/

51. Pneumococcal Infections/

52. Meningitis, Pneumococcal/

53. Meningitis, Meningococcal/

54. Pneumonia, Pneumococcal/

55. Rotavirus Infections/

56. Japanese Encephalitis/

57. Yellow Fever/

58. Encephalitis, Tick-borne/

59. (tetanus or diphtheria? or measles or rubella? or rubeola or mumps or epidemic parotit$ or pertussis or whooping cough or polio$ or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza? or hemophilus influenza? or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$ or MMR).tw.

60. or/36-59

61. Child/

62. Child, Preschool/

63. Infant/

64. exp Infant, Newborn/

65. Child Care/

66. Infant Care/

67. exp Perinatal Care/

68. exp Parents/

69. (child$ or infant$ or newborn? or neonat$ or baby or babies or toddler? or parent* or father*).tw.

70. or/61-69

71. Mothers/

72. Women/

73. Pregnant Women/

74. Female/

75. (woman or women or mother? or female?).tw.

76. or/71-75

77. exp Communication/

78. ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) adj1 communication).mp.

79. (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or discuss* or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or interview* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating).hw,ti.

80. (readability or intelligibility or credibility).mp.

81. (disclos* or trust* or truth* or deceiv* or deception or misinform*).hw,ti.

82. exp Interpersonal Relations/

83. hospital patient relations/

84. community institutional relations/

85. ((professional or physician or doctor or clinician or nurse or provider) adj1 (patient or client or family)).tw.

86. ((health or patient or client) adj (education or knowledge or promotion)).mp.

87. exp health promotion/

88. ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) adj1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)).mp.

89. (((medical or continuing or residency or distance) adj2 education) or internship or inservice or in-service or staff development or professional development or mentor* or lifelong learning).mp.

90. (self adj (teaching or education or instruction)).mp.

91. ((media adj3 campaign*) or (promotion adj1 program*) or (community based adj3 intervention*) or (home adj3 visit*) or (awareness adj3 (rais* or increas*))).tw.

92. marketing.mp.

93. ((family or office or work* or school or faith or church) adj based).tw.

94. (educational status or literacy).mp.

95. ((improv* or increas* or enhanc* or patient) adj3 (understanding or comprehension)).tw.

96. (information* adj (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)).mp.

97. ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) adj2 inform*).mp.

98. (((inform* or message* or communicat* or effect* or gain or positive or negative) adj2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) adj (format* or presentation* or display*))).mp.

99. (counsel* or ((social or carer* or caregiver* or care giver* or patient*) adj1 support*) or psychosocial or ((social or pastoral or spiritual) adj care) or religio* or chaplaincy or behavior modification or behaviour modification).mp.

100. (counsel*ing session* or ((support or peer or self-help or self-care) adj2 (intervention* or group* or program*))).mp.

101. ((social or community) adj2 network*).mp.

102. (self-care or self-management).mp.

103. (motivat* or incentive* or goal*).mp.

104. exp Communications Media/

105. ((mass or communication* or electronic or digital or multi or print* or social or new) adj media).tw.

106. ((print* adj (material* or based)) or paper-based or written material* or (paper adj1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or card or cards or picture* or pictogram*).mp.

107. (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual adj (reality or world or environment*))).mp.

108. ((electronic or e-) adj (mail or prescri* or health or game*)).mp.

109. exp computer systems/

110. software/

111. (computer* adj1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction)).mp.

112. (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*).mp.

113. (((automat* or interactive*) adj3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) adj (response or recognition or messag* or system* or technolog*))).mp.

114. (cultural* adj (competen* or sensitiv* or appropriate)).mp.

115. ((cultural* or linguistic* or language) adj3 (service* or care or intervention* or message*)).mp.

116. (participation or advocacy or consumer* or empower*).mp.

117. exp decision making/

118. (decision adj (making or support or aid*)).mp.

119. exp informed consent/

120. (informed adj (consent or choice* or decision*)).tw.

121. ((patient or person or family or client) adj (cent*red or focus*ed or oriented)).mp.

122. (therapeutic adj (relation* or alliance*)).mp.

123. or/77-122

124. 70 or 76

125. 9 and 60

126. 35 or 125

127. randomised controlled trial.pt.

128. controlled clinical trial.pt.

129. multicenter study.pt.

130. (randomis* or randomiz* or randomly allocat* or random allocat*).ti,ab.

131. groups.ab.

132. (trial or multicenter or multi center or multicentre or multi centre).ti,ab.

133. (intervention* or controlled or control group or compare or compared or (before adj5 after) or (pre adj5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point? or repeated measur*).ti,ab.

134. or/127-133

135. exp Animals/

136. Humans/

137. 135 not (135 and 136)

138. review.pt.

139. meta analysis.pt.

140. news.pt.

141. comment.pt.

142. editorial.pt.

143. cochrane database of systematic reviews.jn.

144. comment on.cm.

145. (systematic review or literature review).ti.

146. 137 or 138 or 139 or 140 or 141 or 142 or 143 or 144 or 145

147. 134 not 146

148. 9 and 60

149. 35 or 148

150. 123 and 124 and 147 and 149 **(Result 3897)**

EMBASE

Searched 3 July 2012

1. immunization/

2. active immunization/

3. mass immunization/

4. vaccination/

5. revaccination/

6. exp vaccine/

7. (vaccin$ or revaccinat$ or immuniz$ or immunis$ or immunother$ or inoculat$ or innoculat* or prophyla*).tw.

8. or/1-7

9. tetanus toxoid/

10. diphtheria toxoid/

11. diphtheria pertussis tetanus vaccine/

12. pertussis vaccine/

13. measles mumps rubella vaccine/

14. measles vaccine/

15. mumps vaccine/

16. rubella vaccine/

17. poliomyelitis vaccine/

18. oral poliomyelitis vaccine/

19. BCG vaccine/

20. hepatitis vaccine/

21. hepatitis B vaccine/

22. Haemophilus vaccine/

23. Meningococcus vaccine/

24. Pneumococcus vaccine/

25. Rotavirus vaccine/

26. Japanese encephalitis vaccine/

27. yellow fever vaccine/

28. ((tetanus or diphtheria) adj toxoid).tw.

29. ((tetanus or diphtheria? or pertussis or whooping cough or measles or mumps or rubella? or rubeola or mmr or polio$ or tuberculosis or tuberculoses or bcg or calmette$ or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$) adj vaccin$).tw.

30. or/9-29

31. tetanus/

32. diphtheria/

33. measles/

34. mumps/

35. rubella/

36. pertussis/

37. poliomyelitis/

38. tuberculosis/

39. lung tuberculosis/

40. Mycobacterium tuberculosis/

41. hepatitis B/

42. haemophilus influenzae/ or haemophilus influenzae type b/

43. pneumococcal infection/

44. pneumococcal meningitis/

45. epidemic meningitis/

46. pneumonia/

47. Rotavirus infection/

48. Japanese encephalitis/

49. yellow fever/

50. tick borne encephalitis/

51. (tetanus or diphtheria? or measles or rubella? or rubeola or mumps or epidemic parotit$ or pertussis or whooping cough or polio$ or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza? or hemophilus influenza? or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$ or MMR).tw.

52. or/31-51

53. child/

54. preschool child/

55. infant/

56. newborn/

57. child care/

58. perinatal care/

59. exp parent/

60. (child$ or infant$ or newborn? or neonat$ or baby or babies or toddler? or parent* or father*).tw.

61. or/53-60

62. mother/ or adolescent mother/ or expectant mother/

63. female/

64. pregnant woman/

65. (woman or women or mother? or female?).tw.

66. or/62-65

67. exp interpersonal communication/

68. ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) adj1 communication).mp.

69. (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or discuss* or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or interview* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating).hw,ti.

70. (readability or intelligibility or credibility).mp.

71. (disclos* or trust* or truth* or deceiv* or deception or misinform*).hw,ti.

72. ((professional or physician or doctor or clinician or nurse or provider) adj1 (patient or client or family)).tw.

73. ((health or patient or client) adj (education or knowledge or promotion)).mp.

74. health promotion/

75. ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) adj1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)).mp.

76. (((medical or continuing or residency or distance) adj2 education) or internship or inservice or in-service or staff development or professional development or mentor* or lifelong learning).mp.

77. (self adj (teaching or education or instruction)).mp.

78. ((media adj3 campaign*) or (promotion adj1 program*) or (community based adj3 intervention*) or (home adj3 visit*) or (awareness adj3 (rais* or increas*))).tw.

79. marketing.mp.

80. ((family or office or work* or school or faith or church) adj based).tw.

81. (educational status or literacy).mp.

82. ((improv* or increas* or enhanc* or patient) adj3 (understanding or comprehension)).tw.

83. (information* adj (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)).mp.

84. ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) adj2 inform*).mp.

85. (((inform* or message* or communicat* or effect* or gain or positive or negative) adj2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) adj (format* or presentation* or display*))).mp.

86. (counsel* or ((social or carer* or caregiver* or care giver* or patient*) adj1 support*) or psychosocial or ((social or pastoral or spiritual) adj care) or religio* or chaplaincy or behavior modification or behaviour modification).mp.

87. (counsel*ing session* or ((support or peer or self-help or self-care) adj2 (intervention* or group* or program*))).mp.

88. ((social or community) adj2 network*).mp.

89. (self-care or self-management).mp.

90. (motivat* or incentive* or goal*).mp.

91. ((mass or communication* or electronic or digital or multi or print* or social or new) adj media).tw.

92. ((print* adj (material* or based)) or paper-based or written material* or (paper adj1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or card or cards or picture* or pictogram*).mp.

93. social media/

94. (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual adj (reality or world or environment*))).mp.

95. ((electronic or e-) adj (mail or prescri* or health or game*)).mp.

96. computer system/

97. computer program/

98. (computer* adj1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction)).mp.

99. (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*).mp.

100. (((automat* or interactive*) adj3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) adj (response or recognition or messag* or system* or technolog*))).mp.

101. (cultural* adj (competen* or sensitiv* or appropriate)).mp.

102. ((cultural* or linguistic* or language) adj3 (service* or care or intervention* or message*)).mp.

103. (participation or advocacy or consumer* or empower*).mp.

104. decision making/

105. patient decision making/

106. decision support system/

107. (decision adj (making or support or aid*)).mp.

108. parental consent/ or informed consent/

109. (informed adj (consent or choice* or decision*)).tw.

110. ((patient or person or family or client) adj (cent*red or focus*ed or oriented)).mp.

111. (therapeutic adj (relation* or alliance*)).mp.

112. or/67-111

113. 61 or 66

114. 8 and 52

115. 114 or 30

116. randomised controlled trial/

117. controlled clinical trial/

118. quasi experimental study/

119. pretest posttest control group design/

120. time series analysis/

121. experimental design/

122. multicenter study/

123. (randomis* or randomiz* or randomly or random allocat*).ti,ab.

124. groups.ab.

125. (trial or multicenter or multi center or multicentre or multi centre).ti,ab.

126. (intervention* or controlled or control group or compare or compared or (before adj5 after) or (pre adj5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point? or repeated measur*).ti,ab.

127. or/116-126

128. (systematic review or literature review).ti.

129. "cochrane database of systematic reviews".jn.

130. nonhuman/

131. or/128-130

132. 127 not 131

133. 112 and 113 and 115 and 132 **(Result 4936)**

Global Health

Searched 6 July 2012

1. immunization/

2. exp vaccination/

3. immunization programmes/

4. immunotherapy/

5. (vaccinat$ or revaccinat$ or immuniz$ or immunis$ or immunother$ or inoculat$ or innoculat* or prophyla*).tw.

6. or/1-5

7. tetanus toxoid/

8. diphtheria toxoid/

9. diphtheria pertussis tetanus vaccines/

10. measles mumps rubella vaccines/

11. poliomyelitis/

12. bcg vaccine/

13. ((tetanus or diphtheria) adj toxoid).tw.

14. ((tetanus or diphtheria? or pertussis or whooping cough or measles or mumps or rubella? or rubeola or mmr or polio$ or tuberculosis or tuberculoses or bcg or calmette$ or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$) adj vaccin$).tw.

15. or/7-14

16. exp tetanus/

17. diphtheria/

18. measles/

19. mumps/

20. exp rubella/

21. pertussis/

22. poliomyelitis/

23. exp tuberculosis/

24. mycobacterium tuberculosis/

25. hepatitis b/

26. exp haemophilus influenzae/

27. meningitis/ or bacterial meningitis/ or cryptococcal meningitis/ or neonatal meningitis/

28. rotavirus/

29. japanese encephalitis/

30. yellow fever/

31. tickborne encephalitis/

32. (tetanus or diphtheria? or measles or rubella? or rubeola or mumps or epidemic parotit$ or pertussis or whooping cough or polio$ or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza? or hemophilus influenza? or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$ or MMR).tw.

33. or/16-32

34. children/

35. preschool children/

36. infants/ or neonates/

37. child care/

38. exp parents/

39. (child$ or infant$ or newborn? or neonat$ or baby or babies or toddler? or parent* or father*).tw.

40. mothers/

41. fathers/

42. women/ or housewives/ or lactating women/ or rural women/

43. females/

44. (woman or women or mother? or female?).tw.

45. or/34-44

46. communication/ or interpretation/ or nonverbal communication/ or verbal communication/

47. ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) adj1 communication).mp.

48. (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or discuss* or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or interview* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating).hw,ti.

49. (readability or intelligibility or credibility).mp.

50. (disclos* or trust* or truth* or deceiv* or deception or misinform*).hw,ti.

51. exp interpersonal relations/

52. ((professional or physician or doctor or clinician or nurse or provider) adj1 (patient or client or family)).tw.

53. ((health or patient or client) adj (education or knowledge or promotion)).mp.

54. health promotion/

55. ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) adj1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)).mp.

56. (((medical or continuing or residency or distance) adj2 education) or internship or inservice or in-service or staff development or professional development or mentor* or lifelong learning).mp.

57. (self adj (teaching or education or instruction)).mp.

58. ((media adj3 campaign*) or (promotion adj1 program*) or (community based adj3 intervention*) or (home adj3 visit*) or (awareness adj3 (rais* or increas*))).tw.

59. marketing.mp.

60. ((family or office or work* or school or faith or church) adj based).tw.

61. (educational status or literacy).mp.

62. ((improv* or increas* or enhanc* or patient) adj3 (understanding or comprehension)).tw.

63. (information* adj (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)).mp.

64. ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) adj2 inform*).mp.

65. (((inform* or message* or communicat* or effect* or gain or positive or negative) adj2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) adj (format* or presentation* or display*))).mp.

66. (counsel* or ((social or carer* or caregiver* or care giver* or patient*) adj1 support*) or psychosocial or ((social or pastoral or spiritual) adj care) or religio* or chaplaincy or behavior modification or behaviour modification).mp.

67. (counsel*ing session* or ((support or peer or self-help or self-care) adj2 (intervention* or group* or program*))).mp.

68. ((social or community) adj2 network*).mp.

69. (self-care or self-management).mp.

70. (motivat* or incentive* or goal*).mp.

71. exp mass media/

72. ((mass or communication* or electronic or digital or multi or print* or social or new) adj media).tw.

73. ((print* adj (material* or based)) or paper-based or written material* or (paper adj1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or card or cards or picture* or pictogram*).mp.

74. (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual adj (reality or world or environment*))).mp.

75. ((electronic or e-) adj (mail or prescri* or health or game*)).mp.

76. exp computer techniques/

77. computer software/

78. (computer* adj1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction)).mp.

79. (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*).mp.

80. (((automat* or interactive*) adj3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) adj (response or recognition or messag* or system* or technolog*))).mp.

81. (cultural* adj (competen* or sensitiv* or appropriate)).mp.

82. ((cultural* or linguistic* or language) adj3 (service* or care or intervention* or message*)).mp.

83. (participation or advocacy or consumer* or empower*).mp.

84. decision making/

85. (decision adj (making or support or aid*)).mp.

86. consent/

87. (informed adj (consent or choice* or decision*)).tw.

88. ((patient or person or family or client) adj (cent*red or focus*ed or oriented)).mp.

89. (therapeutic adj (relation* or alliance*)).mp.

90. or/46-89

91. randomised controlled trials/

92. (randomis* or randomiz* or randomly allocat* or random allocat*).ti,ab.

93. groups.ab.

94. (trial or multicenter or multi center or multicentre or multi centre).ti,ab.

95. (intervention* or controlled or control group or compare or compared or (before adj5 after) or (pre adj5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point? or repeated measur*).ti,ab.

96. (intervention* or controlled or control group or compare or compared or (before adj5 after) or (pre adj5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point? or repeated measur*).ti,ab.

97. or/91-96

98. exp animals/

99. man/

100. 98 not (98 and 99)

101. systematic reviews/

102. meta-analysis/

103. (systematic review or literature review).ti.

104. literature reviews/

105. or/100-104

106. 97 not 105

107. 6 and 33

108. 107 or 15

109. 45 and 90 and 106 and 108 **(Result 2679)**

PsycINFO

Searched 7 July 2012

1. immunization/

2. (vaccinat$ or revaccinat$ or immuniz$ or immunis$ or immunother$ or inoculat$ or innoculat* or prophyla*).tw.

3. 1 or 2

4. ((tetanus or diphtheria) adj toxoid).tw.

5. ((tetanus or diphtheria? or pertussis or whooping cough or measles or mumps or rubella? or rubeola or mmr or polio$ or tuberculosis or tuberculoses or bcg or calmette$ or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$) adj vaccin$).tw.

6. 4 or 5

7. (tetanus or diphtheria? or measles or rubella? or rubeola or mumps or epidemic parotit$ or pertussis or whooping cough or polio$ or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza? or hemophilus influenza? or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$ or MMR).tw.

8. exp child care/

9. parents/ or adoptive parents/ or fathers/ or foster parents/ or mothers/ or single parents/ or "surrogate parents (humans)"/

10. (child$ or infant$ or newborn? or neonat$ or baby or babies or toddler? or parent* or father*).tw.

11. mothers/ or parents/ or adolescent mothers/ or single mothers/ or unwed mothers/

12. human females/ or sisters/ or wives/ or working women/

13. (woman or women or mother? or female?).tw.

14. or/8-13

15. exp Communication/

16. ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) adj1 communication).mp.

17. (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or discuss* or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or interview* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating).hw,ti.

18. (readability or intelligibility or credibility).mp.

19. (disclos* or trust* or truth* or deceiv* or deception or misinform*).hw,ti.

20. family relations/ or interpersonal relationships/ or childrearing practices/ or parental role/

21. ((professional or physician or doctor or clinician or nurse or provider) adj1 (patient or client or family)).tw.

22. ((health or patient or client) adj (education or knowledge or promotion)).mp.

23. health promotion/

24. ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) adj1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)).mp.

25. (((medical or continuing or residency or distance) adj2 education) or internship or inservice or in-service or staff development or professional development or mentor* or lifelong learning).mp.

26. (self adj (teaching or education or instruction)).mp.

27. ((media adj3 campaign*) or (promotion adj1 program*) or (community based adj3 intervention*) or (home adj3 visit*) or (awareness adj3 (rais* or increas*))).tw.

28. marketing.mp.

29. ((family or office or work* or school or faith or church) adj based).tw.

30. (educational status or literacy).mp.

31. ((improv* or increas* or enhanc* or patient) adj3 (understanding or comprehension)).tw.

32. (information* adj (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)).mp.

33. ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) adj2 inform*).mp.

34. (((inform* or message* or communicat* or effect* or gain or positive or negative) adj2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) adj (format* or presentation* or display*))).mp.

35. (counsel* or ((social or carer* or caregiver* or care giver* or patient*) adj1 support*) or psychosocial or ((social or pastoral or spiritual) adj care) or religio* or chaplaincy or behavior modification or behaviour modification).mp.

36. (counsel*ing session* or ((support or peer or self-help or self-care) adj2 (intervention* or group* or program*))).mp.

37. ((social or community) adj2 network*).mp.

38. (self-care or self-management).mp.

39. (motivat* or incentive* or goal*).mp.

40. exp communications media/

41. ((mass or communication* or electronic or digital or multi or print* or social or new) adj media).tw.

42. ((print* adj (material* or based)) or paper-based or written material* or (paper adj1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or card or cards or picture* or pictogram*).mp.

43. (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual adj (reality or world or environment*))).mp.

44. ((electronic or e-) adj (mail or prescri* or health or game*)).mp.

45. computer applications/

46. computer software/ or decision support systems/

47. (computer* adj1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction)).mp.

48. (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*).mp.

49. (((automat* or interactive*) adj3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) adj (response or recognition or messag* or system* or technolog*))).mp.

50. (cultural* adj (competen* or sensitiv* or appropriate)).mp.

51. ((cultural* or linguistic* or language) adj3 (service* or care or intervention* or message*)).mp.

52. (participation or advocacy or consumer* or empower*).mp.

53. decision making/ or choice behavior/ or group decision making/

54. (decision adj (making or support or aid*)).mp.

55. informed consent/

56. (informed adj (consent or choice* or decision*)).tw.

57. ((patient or person or family or client) adj (cent*red or focus*ed or oriented)).mp.

58. (therapeutic adj (relation* or alliance*)).mp.

59. or/15-58

60. (randomis* or randomiz* or randomly allocat* or random allocat*).ti,ab.

61. groups.ab.

62. (trial or multicenter or multi center or multicentre or multi centre).ti,ab.

63. (intervention* or controlled or control group or compare or compared or (before adj5 after) or (pre adj5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point? or repeated measur*).ti,ab.

64. or/60-63

65. 3 and 7

66. 6 or 65

67. 14 and 59 and 64 and 66

68. 14 and 59 and 66 **(Result 187)**

COMMVAC Multifile Community-wide –(files pmoz emczd cagz psyh)

Duplicates removed & MEDLINE excluded 7 July 2012 – Result 7802

1. Immunization/

2. Immunization Schedule/

3. Immunization, Secondary/

4. Immunotherapy, Active/

5. Mass Immunization/

6. Immunization Programs/

7. Vaccination/

8. (vaccinat$ or revaccinat$ or immuniz$ or immunis$ or immunother$ or inoculat$ or innoculat* or prophyla*).tw.

9. or/1-8

10. Tetanus Toxoid/

11. Diphtheria Toxoid/

12. Diphtheria-Tetanus-Acellular Pertussis Vaccines/

13. Diphtheria-Tetanus-Pertussis Vaccine/

14. Diphtheria-Tetanus Vaccine/

15. Pertussis Vaccine/

16. Measles-Mumps-Rubella Vaccine/

17. Measles Vaccine/

18. Mumps Vaccine/

19. Rubella Vaccine/

20. Poliovirus Vaccines/

21. Poliovirus Vaccine, Inactivated/

22. Poliovirus Vaccine, Oral/

23. Tuberculosis Vaccines/

24. BCG Vaccine/

25. Viral Hepatitis Vaccines/

26. Hepatitis B Vaccines/

27. Haemophilus Vaccines/

28. Pneumococcal Vaccines/

29. Meningococcal Vaccines/

30. Rotavirus Vaccines/

31. Japanese Encephalitis Vaccine/

32. Yellow Fever Vaccine/

33. ((tetanus or diphtheria) adj toxoid).tw.

34. ((tetanus or diphtheria? or pertussis or whooping cough or measles or mumps or rubella? or rubeola or mmr or polio$ or tuberculosis or tuberculoses or bcg or calmette$ or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$) adj vaccin$).tw.

35. or/10-34

36. Tetanus/

37. Diphtheria/

38. Measles/

39. Mumps/

40. Rubella/

41. Whooping Cough/

42. Poliomyelitis/

43. Poliomyelitis, Bulbar/

44. Tuberculosis/

45. Tuberculosis, Pulmonary/

46. Mycobacterium Tuberculosis/

47. Hepatitis B/

48. Hepatitis B, Chronic/

49. Haemophilus Influenzae/

50. Haemophilus Influenzae Type B/

51. Pneumococcal Infections/

52. Meningitis, Pneumococcal/

53. Meningitis, Meningococcal/

54. Pneumonia, Pneumococcal/

55. Rotavirus Infections/

56. Japanese Encephalitis/

57. Yellow Fever/

58. Encephalitis, Tick-borne/

59. (tetanus or diphtheria? or measles or rubella? or rubeola or mumps or epidemic parotit$ or pertussis or whooping cough or polio$ or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza? or hemophilus influenza? or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$ or MMR).tw.

60. or/36-59

61. Child/

62. Child, Preschool/

63. Infant/

64. exp Infant, Newborn/

65. Child Care/

66. Infant Care/

67. exp Perinatal Care/

68. exp Parents/

69. (child$ or infant$ or newborn? or neonat$ or baby or babies or toddler? or parent* or father*).tw.

70. or/61-69

71. Mothers/

72. Women/

73. Pregnant Women/

74. Female/

75. (woman or women or mother? or female?).tw.

76. or/71-75

77. exp Communication/

78. ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) adj1 communication).mp.

79. (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or discuss* or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or interview* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating).hw,ti.

80. (readability or intelligibility or credibility).mp.

81. (disclos* or trust* or truth* or deceiv* or deception or misinform*).hw,ti.

82. exp Interpersonal Relations/

83. hospital patient relations/

84. community institutional relations/

85. ((professional or physician or doctor or clinician or nurse or provider) adj1 (patient or client or family)).tw.

86. ((health or patient or client) adj (education or knowledge or promotion)).mp.

87. exp health promotion/

88. ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) adj1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)).mp.

89. (((medical or continuing or residency or distance) adj2 education) or internship or inservice or in-service or staff development or professional development or mentor* or lifelong learning).mp.

90. (self adj (teaching or education or instruction)).mp.

91. ((media adj3 campaign*) or (promotion adj1 program*) or (community based adj3 intervention*) or (home adj3 visit*) or (awareness adj3 (rais* or increas*))).tw.

92. marketing.mp.

93. ((family or office or work* or school or faith or church) adj based).tw.

94. (educational status or literacy).mp.

95. ((improv* or increas* or enhanc* or patient) adj3 (understanding or comprehension)).tw.

96. (information* adj (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)).mp.

97. ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) adj2 inform*).mp.

98. (((inform* or message* or communicat* or effect* or gain or positive or negative) adj2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) adj (format* or presentation* or display*))).mp.

99. (counsel* or ((social or carer* or caregiver* or care giver* or patient*) adj1 support*) or psychosocial or ((social or pastoral or spiritual) adj care) or religio* or chaplaincy or behavior modification or behaviour modification).mp.

100. (counsel*ing session* or ((support or peer or self-help or self-care) adj2 (intervention* or group* or program*))).mp.

101. ((social or community) adj2 network*).mp.

102. (self-care or self-management).mp.

103. (motivat* or incentive* or goal*).mp.

104. exp Communications Media/

105. ((mass or communication* or electronic or digital or multi or print* or social or new) adj media).tw.

106. ((print* adj (material* or based)) or paper-based or written material* or (paper adj1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or card or cards or picture* or pictogram*).mp.

107. (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual adj (reality or world or environment*))).mp.

108. ((electronic or e-) adj (mail or prescri* or health or game*)).mp.

109. exp computer systems/

110. software/

111. (computer* adj1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction)).mp.

112. (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*).mp.

113. (((automat* or interactive*) adj3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) adj (response or recognition or messag* or system* or technolog*))).mp.

114. (cultural* adj (competen* or sensitiv* or appropriate)).mp.

115. ((cultural* or linguistic* or language) adj3 (service* or care or intervention* or message*)).mp.

116. (participation or advocacy or consumer* or empower*).mp.

117. exp decision making/

118. (decision adj (making or support or aid*)).mp.

119. exp informed consent/

120. (informed adj (consent or choice* or decision*)).tw.

121. ((patient or person or family or client) adj (cent*red or focus*ed or oriented)).mp.

122. (therapeutic adj (relation* or alliance*)).mp.

123. or/77-122

124. 70 or 76

125. 9 and 60

126. 35 or 125

127. randomised controlled trial.pt.

128. controlled clinical trial.pt.

129. multicenter study.pt.

130. (randomis* or randomiz* or randomly allocat* or random allocat*).ti,ab.

131. groups.ab.

132. (trial or multicenter or multi center or multicentre or multi centre).ti,ab.

133. (intervention* or controlled or control group or compare or compared or (before adj5 after) or (pre adj5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point? or repeated measur*).ti,ab.

134. or/127-133

135. exp Animals/

136. Humans/

137. 135 not (135 and 136)

138. review.pt.

139. meta analysis.pt.

140. news.pt.

141. comment.pt.

142. editorial.pt.

143. cochrane database of systematic reviews.jn.

144. comment on.cm.

145. (systematic review or literature review).ti.

146. 137 or 138 or 139 or 140 or 141 or 142 or 143 or 144 or 145

147. 134 not 146

148. 9 and 60

149. 35 or 148

150. 123 and 124 and 147 and 149

151. 150 use pmoz

152. immunization/

153. active immunization/

154. mass immunization/

155. vaccination/

156. revaccination/

157. exp vaccine/

158. (vaccin$ or revaccinat$ or immuniz$ or immunis$ or immunother$ or inoculat$ or innoculat* or prophyla*).tw.

159. or/152-158

160. tetanus toxoid/

161. diphtheria toxoid/

162. diphtheria pertussis tetanus vaccine/

163. pertussis vaccine/

164. measles mumps rubella vaccine/

165. measles vaccine/

166. mumps vaccine/

167. rubella vaccine/

168. poliomyelitis vaccine/

169. oral poliomyelitis vaccine/

170. BCG vaccine/

171. hepatitis vaccine/

172. hepatitis B vaccine/

173. Haemophilus vaccine/

174. Meningococcus vaccine/

175. Pneumococcus vaccine/

176. Rotavirus vaccine/

177. Japanese encephalitis vaccine/

178. yellow fever vaccine/

179. ((tetanus or diphtheria) adj toxoid).tw.

180. ((tetanus or diphtheria? or pertussis or whooping cough or measles or mumps or rubella? or rubeola or mmr or polio$ or tuberculosis or tuberculoses or bcg or calmette$ or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$) adj vaccin$).tw.

181. or/160-180

182. tetanus/

183. diphtheria/

184. measles/

185. mumps/

186. rubella/

187. pertussis/

188. poliomyelitis/

189. tuberculosis/

190. lung tuberculosis/

191. Mycobacterium tuberculosis/

192. hepatitis B/

193. haemophilus influenzae/ or haemophilus influenzae type b/

194. pneumococcal infection/

195. pneumococcal meningitis/

196. epidemic meningitis/

197. pneumonia/

198. Rotavirus infection/

199. Japanese encephalitis/

200. yellow fever/

201. tick borne encephalitis/

202. (tetanus or diphtheria? or measles or rubella? or rubeola or mumps or epidemic parotit$ or pertussis or whooping cough or polio$ or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza? or hemophilus influenza? or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$ or MMR).tw.

203. or/182-202

204. child/

205. preschool child/

206. infant/

207. newborn/

208. child care/

209. perinatal care/

210. exp parent/

211. (child$ or infant$ or newborn? or neonat$ or baby or babies or toddler? or parent* or father*).tw.

212. or/204-211

213. mother/ or adolescent mother/ or expectant mother/

214. female/

215. pregnant woman/

216. (woman or women or mother? or female?).tw.

217. or/213-216

218. exp interpersonal communication/

219. ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) adj1 communication).mp.

220. (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or discuss* or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or interview* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating).hw,ti.

221. (readability or intelligibility or credibility).mp.

222. (disclos* or trust* or truth* or deceiv* or deception or misinform*).hw,ti.

223. ((professional or physician or doctor or clinician or nurse or provider) adj1 (patient or client or family)).tw.

224. ((health or patient or client) adj (education or knowledge or promotion)).mp.

225. health promotion/

226. ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) adj1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)).mp.

227. (((medical or continuing or residency or distance) adj2 education) or internship or inservice or in-service or staff development or professional development or mentor* or lifelong learning).mp.

228. (self adj (teaching or education or instruction)).mp.

229. ((media adj3 campaign*) or (promotion adj1 program*) or (community based adj3 intervention*) or (home adj3 visit*) or (awareness adj3 (rais* or increas*))).tw.

230. marketing.mp.

231. ((family or office or work* or school or faith or church) adj based).tw.

232. (educational status or literacy).mp.

233. ((improv* or increas* or enhanc* or patient) adj3 (understanding or comprehension)).tw.

234. (information* adj (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)).mp.

235. ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) adj2 inform*).mp.

236. (((inform* or message* or communicat* or effect* or gain or positive or negative) adj2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) adj (format* or presentation* or display*))).mp.

237. (counsel* or ((social or carer* or caregiver* or care giver* or patient*) adj1 support*) or psychosocial or ((social or pastoral or spiritual) adj care) or religio* or chaplaincy or behavior modification or behaviour modification).mp.

238. (counsel*ing session* or ((support or peer or self-help or self-care) adj2 (intervention* or group* or program*))).mp.

239. ((social or community) adj2 network*).mp.

240. (self-care or self-management).mp.

241. (motivat* or incentive* or goal*).mp.

242. ((mass or communication* or electronic or digital or multi or print* or social or new) adj media).tw.

243. ((print* adj (material* or based)) or paper-based or written material* or (paper adj1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or card or cards or picture* or pictogram*).mp.

244. social media/

245. (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual adj (reality or world or environment*))).mp.

246. ((electronic or e-) adj (mail or prescri* or health or game*)).mp.

247. computer system/

248. computer program/

249. (computer* adj1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction)).mp.

250. (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*).mp.

251. (((automat* or interactive*) adj3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) adj (response or recognition or messag* or system* or technolog*))).mp.

252. (cultural* adj (competen* or sensitiv* or appropriate)).mp.

253. ((cultural* or linguistic* or language) adj3 (service* or care or intervention* or message*)).mp.

254. (participation or advocacy or consumer* or empower*).mp.

255. decision making/

256. patient decision making/

257. decision support system/

258. (decision adj (making or support or aid*)).mp.

259. parental consent/ or informed consent/

260. (informed adj (consent or choice* or decision*)).tw.

261. ((patient or person or family or client) adj (cent*red or focus*ed or oriented)).mp.

262. (therapeutic adj (relation* or alliance*)).mp.

263. or/218-262

264. 212 or 217

265. 159 and 203

266. 265 or 181

267. randomized controlled trial/

268. controlled clinical trial/

269. quasi experimental study/

270. pretest posttest control group design/

271. time series analysis/

272. experimental design/

273. multicenter study/

274. (randomis* or randomiz* or randomly or random allocat*).ti,ab.

275. groups.ab.

276. (trial or multicenter or multi center or multicentre or multi centre).ti,ab.

277. (intervention* or controlled or control group or compare or compared or (before adj5 after) or (pre adj5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point? or repeated measur*).ti,ab.

278. or/267-277

279. (systematic review or literature review).ti.

280. "cochrane database of systematic reviews".jn.

281. nonhuman/

282. or/279-281

283. 278 not 282

284. 263 and 264 and 266 and 283

285. 284 use emczd

286. immunization/

287. exp vaccination/

288. immunization programmes/

289. immunotherapy/

290. (vaccinat$ or revaccinat$ or immuniz$ or immunis$ or immunother$ or inoculat$ or innoculat* or prophyla*).tw.

291. or/286-290

292. tetanus toxoid/

293. diphtheria toxoid/

294. diphtheria pertussis tetanus vaccines/

295. measles mumps rubella vaccines/

296. poliomyelitis/

297. bcg vaccine/

298. ((tetanus or diphtheria) adj toxoid).tw.

299. ((tetanus or diphtheria? or pertussis or whooping cough or measles or mumps or rubella? or rubeola or mmr or polio$ or tuberculosis or tuberculoses or bcg or calmette$ or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$) adj vaccin$).tw.

300. or/292-299

301. exp tetanus/

302. diphtheria/

303. measles/

304. mumps/

305. exp rubella/

306. pertussis/

307. poliomyelitis/

308. exp tuberculosis/

309. mycobacterium tuberculosis/

310. hepatitis b/

311. exp haemophilus influenzae/

312. meningitis/ or bacterial meningitis/ or cryptococcal meningitis/ or neonatal meningitis/

313. rotavirus/

314. japanese encephalitis/

315. yellow fever/

316. tickborne encephalitis/

317. (tetanus or diphtheria? or measles or rubella? or rubeola or mumps or epidemic parotit$ or pertussis or whooping cough or polio$ or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza? or hemophilus influenza? or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$ or MMR).tw.

318. or/301-317

319. children/

320. preschool children/

321. infants/ or neonates/

322. child care/

323. exp parents/

324. (child$ or infant$ or newborn? or neonat$ or baby or babies or toddler? or parent* or father*).tw.

325. mothers/

326. fathers/

327. women/ or housewives/ or lactating women/ or rural women/

328. females/

329. (woman or women or mother? or female?).tw.

330. or/319-329

331. communication/ or interpretation/ or nonverbal communication/ or verbal communication/

332. ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) adj1 communication).mp.

333. (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or discuss* or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or interview* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating).hw,ti.

334. (readability or intelligibility or credibility).mp.

335. (disclos* or trust* or truth* or deceiv* or deception or misinform*).hw,ti.

336. exp interpersonal relations/

337. ((professional or physician or doctor or clinician or nurse or provider) adj1 (patient or client or family)).tw.

338. ((health or patient or client) adj (education or knowledge or promotion)).mp.

339. health promotion/

340. ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) adj1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)).mp.

341. (((medical or continuing or residency or distance) adj2 education) or internship or inservice or in-service or staff development or professional development or mentor* or lifelong learning).mp.

342. (self adj (teaching or education or instruction)).mp.

343. ((media adj3 campaign*) or (promotion adj1 program*) or (community based adj3 intervention*) or (home adj3 visit*) or (awareness adj3 (rais* or increas*))).tw.

344. marketing.mp.

345. ((family or office or work* or school or faith or church) adj based).tw.

346. (educational status or literacy).mp.

347. ((improv* or increas* or enhanc* or patient) adj3 (understanding or comprehension)).tw.

348. (information* adj (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)).mp.

349. ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) adj2 inform*).mp.

350. (((inform* or message* or communicat* or effect* or gain or positive or negative) adj2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) adj (format* or presentation* or display*))).mp.

351. (counsel* or ((social or carer* or caregiver* or care giver* or patient*) adj1 support*) or psychosocial or ((social or pastoral or spiritual) adj care) or religio* or chaplaincy or behavior modification or behaviour modification).mp.

352. (counsel*ing session* or ((support or peer or self-help or self-care) adj2 (intervention* or group* or program*))).mp.

353. ((social or community) adj2 network*).mp.

354. (self-care or self-management).mp.

355. (motivat* or incentive* or goal*).mp.

356. exp mass media/

357. ((mass or communication* or electronic or digital or multi or print* or social or new) adj media).tw.

358. ((print* adj (material* or based)) or paper-based or written material* or (paper adj1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or card or cards or picture* or pictogram*).mp.

359. (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual adj (reality or world or environment*))).mp.

360. ((electronic or e-) adj (mail or prescri* or health or game*)).mp.

361. exp computer techniques/

362. computer software/

363. (computer* adj1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction)).mp.

364. (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*).mp.

365. (((automat* or interactive*) adj3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) adj (response or recognition or messag* or system* or technolog*))).mp.

366. (cultural* adj (competen* or sensitiv* or appropriate)).mp.

367. ((cultural* or linguistic* or language) adj3 (service* or care or intervention* or message*)).mp.

368. (participation or advocacy or consumer* or empower*).mp.

369. decision making/

370. (decision adj (making or support or aid*)).mp.

371. consent/

372. (informed adj (consent or choice* or decision*)).tw.

373. ((patient or person or family or client) adj (cent*red or focus*ed or oriented)).mp.

374. (therapeutic adj (relation* or alliance*)).mp.

375. or/331-374

376. randomized controlled trials/

377. (randomis* or randomiz* or randomly allocat* or random allocat*).ti,ab.

378. groups.ab.

379. (trial or multicenter or multi center or multicentre or multi centre).ti,ab.

380. (intervention* or controlled or control group or compare or compared or (before adj5 after) or (pre adj5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point? or repeated measur*).ti,ab.

381. (intervention* or controlled or control group or compare or compared or (before adj5 after) or (pre adj5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point? or repeated measur*).ti,ab.

382. or/376-381

383. exp animals/

384. man/

385. 383 not (383 and 384)

386. systematic reviews/

387. meta-analysis/

388. (systematic review or literature review).ti.

389. literature reviews/

390. or/385-389

391. 382 not 390

392. 291 and 318

393. 392 or 300

394. 330 and 375 and 391 and 393

395. 394 use cagz

396. immunization/

397. (vaccinat$ or revaccinat$ or immuniz$ or immunis$ or immunother$ or inoculat$ or innoculat* or prophyla*).tw.

398. 396 or 397

399. ((tetanus or diphtheria) adj toxoid).tw.

400. ((tetanus or diphtheria? or pertussis or whooping cough or measles or mumps or rubella? or rubeola or mmr or polio$ or tuberculosis or tuberculoses or bcg or calmette$ or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$) adj vaccin$).tw.

401. 399 or 400

402. (tetanus or diphtheria? or measles or rubella? or rubeola or mumps or epidemic parotit$ or pertussis or whooping cough or polio$ or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza? or hemophilus influenza? or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus$ or MMR).tw.

403. exp child care/

404. parents/ or adoptive parents/ or fathers/ or foster parents/ or mothers/ or single parents/ or "surrogate parents (humans)"/

405. (child$ or infant$ or newborn? or neonat$ or baby or babies or toddler? or parent* or father*).tw.

406. mothers/ or parents/ or adolescent mothers/ or single mothers/ or unwed mothers/

407. human females/ or sisters/ or wives/ or working women/

408. (woman or women or mother? or female?).tw.

409. or/403-408

410. exp Communication/

411. ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) adj1 communication).mp.

412. (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or discuss* or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or interview* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating).hw,ti.

413. (readability or intelligibility or credibility).mp.

414. (disclos* or trust* or truth* or deceiv* or deception or misinform*).hw,ti.

415. family relations/ or interpersonal relationships/ or childrearing practices/ or parental role/

416. ((professional or physician or doctor or clinician or nurse or provider) adj1 (patient or client or family)).tw.

417. ((health or patient or client) adj (education or knowledge or promotion)).mp.

418. health promotion/

419. ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) adj1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)).mp.

420. (((medical or continuing or residency or distance) adj2 education) or internship or inservice or in-service or staff development or professional development or mentor* or lifelong learning).mp.

421. (self adj (teaching or education or instruction)).mp.

422. ((media adj3 campaign*) or (promotion adj1 program*) or (community based adj3 intervention*) or (home adj3 visit*) or (awareness adj3 (rais* or increas*))).tw.

423. marketing.mp.

424. ((family or office or work* or school or faith or church) adj based).tw.

425. (educational status or literacy).mp.

426. ((improv* or increas* or enhanc* or patient) adj3 (understanding or comprehension)).tw.

427. (information* adj (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)).mp.

428. ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) adj2 inform*).mp.

429. (((inform* or message* or communicat* or effect* or gain or positive or negative) adj2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) adj (format* or presentation* or display*))).mp.

430. (counsel* or ((social or carer* or caregiver* or care giver* or patient*) adj1 support*) or psychosocial or ((social or pastoral or spiritual) adj care) or religio* or chaplaincy or behavior modification or behaviour modification).mp.

431. (counsel*ing session* or ((support or peer or self-help or self-care) adj2 (intervention* or group* or program*))).mp.

432. ((social or community) adj2 network*).mp.

433. (self-care or self-management).mp.

434. (motivat* or incentive* or goal*).mp.

435. exp communications media/

436. ((mass or communication* or electronic or digital or multi or print* or social or new) adj media).tw.

437. ((print* adj (material* or based)) or paper-based or written material* or (paper adj1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or card or cards or picture* or pictogram*).mp.

438. (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual adj (reality or world or environment*))).mp.

439. ((electronic or e-) adj (mail or prescri* or health or game*)).mp.

440. computer applications/

441. computer software/ or decision support systems/

442. (computer* adj1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction)).mp.

443. (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*).mp.

444. (((automat* or interactive*) adj3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) adj (response or recognition or messag* or system* or technolog*))).mp.

445. (cultural* adj (competen* or sensitiv* or appropriate)).mp.

446. ((cultural* or linguistic* or language) adj3 (service* or care or intervention* or message*)).mp.

447. (participation or advocacy or consumer* or empower*).mp.

448. decision making/ or choice behavior/ or group decision making/

449. (decision adj (making or support or aid*)).mp.

450. informed consent/

451. (informed adj (consent or choice* or decision*)).tw.

452. ((patient or person or family or client) adj (cent*red or focus*ed or oriented)).mp.

453. (therapeutic adj (relation* or alliance*)).mp.

454. or/410-453

455. (randomis* or randomiz* or randomly allocat* or random allocat*).ti,ab.

456. groups.ab.

457. (trial or multicenter or multi center or multicentre or multi centre).ti,ab.

458. (intervention* or controlled or control group or compare or compared or (before adj5 after) or (pre adj5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point? or repeated measur*).ti,ab.

459. or/455-458

460. 398 and 402

461. 401 or 460

462. 409 and 454 and 459 and 461

463. 409 and 454 and 461

464. 463 use psyh

465. 151 or 285 or 395 or 464

466. limit 465 to yr="2005 -Current"

467. 465 not 466

468. remove duplicates from 467

469. remove duplicates from 466

470. 468 or 469

471. 470 not 151 **(Result 7802)**

CENTRAL (Cochrane Central Register of Controlled Trials)

Searched 11 July 2012

#1 MeSH descriptor Immunization, this term only

#2 MeSH descriptor Immunization Schedule, this term only

#3 MeSH descriptor Immunization, Secondary, this term only

#4 MeSH descriptor Immunotherapy, Active explode all trees

#5 MeSH descriptor Mass Vaccination, this term only

#6 MeSH descriptor Immunization Programs, this term only

#7 MeSH descriptor Vaccination, this term only

#8 (vaccinat* or revaccinat* or immuniz* or immunis* or immunother* or inoculat* or innoculat* or prophyla*):ti,ab in Trials

#9 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8)

#10 MeSH descriptor Tetanus Toxoid, this term only

#11 MeSH descriptor Diphtheria Toxoid, this term only

#12 MeSH descriptor Diphtheria-Tetanus-acellular Pertussis Vaccines, this term only

#13 MeSH descriptor Diphtheria-Tetanus-Pertussis Vaccine, this term only

#14 MeSH descriptor Diphtheria-Tetanus Vaccine, this term only

#15 MeSH descriptor Pertussis Vaccine, this term only

#16 MeSH descriptor Measles-Mumps-Rubella Vaccine, this term only

#17 MeSH descriptor Measles Vaccine, this term only

#18 MeSH descriptor Mumps Vaccine, this term only

#19 MeSH descriptor Rubella Vaccine, this term only

#20 MeSH descriptor Poliovirus Vaccines, this term only

#21 MeSH descriptor Poliovirus Vaccine, Inactivated, this term only

#22 MeSH descriptor Poliovirus Vaccine, Oral, this term only

#23 MeSH descriptor Tuberculosis Vaccines, this term only

#24 MeSH descriptor BCG Vaccine, this term only

#25 MeSH descriptor Viral Hepatitis Vaccines, this term only

#26 MeSH descriptor Hepatitis B Vaccines, this term only

#27 MeSH descriptor Haemophilus Vaccines, this term only

#28 MeSH descriptor Pneumococcal Vaccines, this term only

#29 MeSH descriptor Meningococcal Vaccines, this term only

#30 MeSH descriptor Rotavirus Vaccines, this term only

#31 MeSH descriptor Japanese Encephalitis Vaccines, this term only

#32 MeSH descriptor Yellow Fever Vaccine, this term only

#33 ((tetanus or diphtheria) near toxoid):ti,ab in Trials

#34 ((tetanus or diphtheria* or pertussis or whooping cough or measles or mumps or rubella* or rubeola or mmr or polio* or tuberculosis or tuberculoses or bcg or calmette* or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus*) near vaccin*):ti,ab in Trials

#35 (#10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34)

#36 MeSH descriptor Tetanus, this term only

#37 MeSH descriptor Diphtheria explode all trees

#38 MeSH descriptor Measles, this term only

#39 MeSH descriptor Mumps, this term only

#40 MeSH descriptor Rubella, this term only

#41 MeSH descriptor Whooping Cough, this term only

#42 MeSH descriptor Poliomyelitis, this term only

#43 MeSH descriptor Poliomyelitis, Bulbar, this term only

#44 MeSH descriptor Tuberculosis, this term only

#45 MeSH descriptor Tuberculosis, Pulmonary, this term only

#46 MeSH descriptor Mycobacterium tuberculosis, this term only

#47 MeSH descriptor Hepatitis B, this term only

#48 MeSH descriptor Hepatitis B, Chronic, this term only

#49 MeSH descriptor Haemophilus influenzae, this term only

#50 MeSH descriptor Haemophilus influenzae type b, this term only

#51 MeSH descriptor Pneumococcal Infections, this term only

#52 MeSH descriptor Meningitis, Pneumococcal, this term only

#53 MeSH descriptor Meningitis, Meningococcal, this term only

#54 MeSH descriptor Pneumonia, Pneumococcal, this term only

#55 MeSH descriptor Rotavirus Infections, this term only

#56 MeSH descriptor Encephalitis, Japanese, this term only

#57 MeSH descriptor Yellow Fever, this term only

#58 MeSH descriptor Encephalitis, Tick-Borne, this term only

#59 (tetanus or diphtheria* or measles or rubella* or rubeola or mumps or epidemic parotit* or pertussis or whooping cough or polio* or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza* or hemophilus influenza* or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus* or MMR):ti,ab in Trials

#60 (#36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45 OR #46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53 OR #54 OR #55 OR #56 OR #57 OR #58 OR #59)

#61 MeSH descriptor Child, this term only

#62 MeSH descriptor Child, Preschool, this term only

#63 MeSH descriptor Infant, this term only

#64 MeSH descriptor Infant, Newborn explode all trees

#65 MeSH descriptor Child Care, this term only

#66 MeSH descriptor Infant Care, this term only

#67 MeSH descriptor Perinatal Care explode all trees

#68 MeSH descriptor Parents explode all trees

#69 (child* or infant* or newborn* or neonat* or baby or babies or toddler* or parent* or father*):ti,ab in Trials

#70 MeSH descriptor Women, this term only

#71 MeSH descriptor Pregnant Women, this term only

#72 (woman or women or mother* or female*):ti,ab in Trials

#73 (#61 OR #62 OR #63 OR #64 OR #65 OR #66 OR #67 OR #68 OR #69 OR #70 OR #71 OR #72)

#74 MeSH descriptor Communication explode all trees

#75 ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) near1 communication):ti,ab in Trials

#76 (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or discuss* or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or interview* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating):ti,ab in Trials

#77 (readability or intelligibility or credibility):ti,ab in Trials

#78 (disclos* or trust* or truth* or deceiv* or deception or misinform*):ti,ab in Trials

#79 MeSH descriptor Interpersonal Relations explode all trees

#80 MeSH descriptor Hospital-Patient Relations, this term only

#81 MeSH descriptor Community-Institutional Relations, this term only

#82 ((professional or physician or doctor or clinician or nurse or provider) near1 (patient or client or family)):ti,ab in Trials

#83 ((health or patient or client) near (education or knowledge or promotion)):ti,ab in Trials

#84 MeSH descriptor Health Promotion explode all trees

#85 ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) near1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)):ti,ab in Trials

#86 (((medical or continuing or residency or distance) near2 education) or internship or inservice or in-service or staff development or professional development or mentor* or lifelong learning):ti,ab in Trials

#87 (self near (teaching or education or instruction)):ti,ab in Trials

#88 ((media near3 campaign*) or (promotion near1 program*) or (community based near3 intervention*) or (home near3 visit*) or (awareness near3 (rais* or increas*))):ti,ab in Trials

#89 marketing:ti,ab in Trials

#90 ((family or office or work* or school or faith or church) near based):ti,ab in Trials

#91 (educational status or literacy):ti,ab in Trials

#92 ((improv* or increas* or enhanc* or patient) near3 (understanding or comprehension)):ti,ab in Trials

#93 (information* near (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)):ti,ab in Trials

#94 ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) near2 inform*):ti,ab in Trials

#95 (((inform* or message* or communicat* or effect* or gain or positive or negative) near2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) near (format* or presentation* or display*))):ti,ab in Trials

#96 (counsel* or ((social or carer* or caregiver* or care giver* or patient*) near1 support*) or psychosocial or ((social or pastoral or spiritual) near care) or religio* or chaplaincy or behavior modification or behaviour modification):ti,ab in Trials

#97 (counsel*ing session* or ((support or peer or self-help or self-care) near2 (intervention* or group* or program*))):ti,ab in Trials

#98 ((social or community) near2 network*):ti,ab in Trials

#99 (self-care or self-management):ti,ab in Trials

#100 (motivat* or incentive* or goal*):ti,ab in Trials

#101 MeSH descriptor Communications Media explode all trees

#102 ((mass or communication* or electronic or digital or multi or print* or social or new) near media):ti,ab in Trials

#103 ((print* near (material* or based)) or paper-based or written material* or (paper near1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or card or cards or picture* or pictogram*):ti,ab in Trials

#104 (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual near (reality or world or environment*))):ti,ab in Trials

#105 ((electronic or e-) near (mail or prescri* or health or game*)):ti,ab in Trials

#106 MeSH descriptor Computer Systems explode all trees

#107 MeSH descriptor Software, this term only

#108 (computer* near1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction)):ti,ab in Trials

#109 (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*):ti,ab in Trials

#110 (((automat* or interactive*) near3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) near (response or recognition or messag* or system* or technolog*))):ti,ab in Trials

#111 (cultural* near (competen* or sensitiv* or appropriate)):ti,ab in Trials

#112 ((cultural* or linguistic* or language) near3 (service* or care or intervention* or message*)):ti,ab in Trials

#113 (participation or advocacy or consumer* or empower*):ti,ab in Trials

#114 MeSH descriptor Decision Making explode all trees

#115 (decision near (making or support or aid*)):ti,ab in Trials

#116 MeSH descriptor Informed Consent explode all trees

#117 (informed near (consent or choice* or decision*)):ti,ab in Trials

#118 ((patient or person or family or client) near (cent*red or focus*ed or oriented)):ti,ab in Trials

#119 (therapeutic near (relation* or alliance*)):ti,ab in Trials

#120 (#74 OR #75 OR #76 OR #77 OR #78 OR #79 OR #80 OR #81 OR #82 OR #83 OR #84 OR #85 OR #86 OR #87 OR #88 OR #89 OR #90 OR #91 OR #92 OR #93 OR #94 OR #95 OR #96 OR #97 OR #98 OR #99 OR #100 OR #101 OR #102 OR #103 OR #104 OR #105 OR #106 OR #107 OR #108 OR #109 OR #110 OR #111 OR #112 OR #113 OR #114 OR #115 OR #116 OR #117 OR #118 OR #119)

#121 (#9 AND #60)

#122 (#35 OR #121)

#123 (#122 AND #73 AND #120) **Result 307**

CINAHL

Searched 19 July 2012

#	Query
S123	S122 NOT S119
S122	S53 and S102 and S110 and S121
S121	S24 or S120
S120	S7 and S43
S119	S114 or S115 or S116 or S117 or S118
S118	TI (systematic review or literature review)
S117	CR (Comment on)
S116	JN (cochrane database of systematic reviews)
S115	PT (review or meta analysis or news or comment or editorial)
S114	S111 NOT S113
S113	S111 and S112
S112	(MH "Human")
S111	(MH "Animals+")
S110	S103 or S104 or S105 or S106 or S107 or S108 or S109
S109	TI (intervention* or controlled or control group or compare or compared or (before N5 after) or (pre N5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point* or repeated measur*) OR AB (intervention* or controlled or control group or compare or compared or (before N5 after) or (pre N5 post) or pretest or pre test or posttest or post test or quasiexperiment* or quasi experiment* or evaluat* or effect or impact or time series or time point* or repeated measur*)
S108	TI (trial or multicenter or multi center or multicentre or multi centre) OR AB (trial or multicenter or multi center or multicentre or multi centre)
S107	AB Groups
S106	TI (randomis* or randomiz* or randomly allocat* or random allocat*) OR AB (randomis* or randomiz* or randomly allocat* or random allocat*)
S105	(MH "Nonrandomized Trials")
S104	(MH "Multicenter Studies")
S103	(MH "Randomized Controlled Trials")
S102	S55 or S56 or S57 or S58 or S59 or S60 or S61 or S62 or S63 or S64 or S65 or S66 or S67 or S68 or S69 or S70 or S71 or S72 or S73 or S74 or S75 or S76 or S77 or S78 or S79 or S80 or S81 or S82 or S83 or

(Continued)

	S84 or S85 or S86 or S87 or S88 or S89 or S90 or S91 or S92 or S93 or S94 or S95 or S96 or S97 or S99 or S100 or S101
S101	TI (therapeutic N1 (relation* or alliance*)) OR AB (therapeutic N1 (relation* or alliance*))
S100	TI ((patient or person or family or client) N1 (cent*red or focus*ed or oriented)) OR AB ((patient or person or family or client) N1 (cent*red or focus*ed or oriented))
S99	TI (informed N1 (consent or choice* or decision*)) OR AB (informed N1 (consent or choice* or decision*))
S98	(MH "Consent (Research)")
S97	TI (decision N1 (making or support or aid*)) OR AB (decision N1 (making or support or aid*))
S96	(MH "Decision Making+")
S95	TI (participation or advocacy or consumer* or empower*) OR AB (participation or advocacy or consumer* or empower*)
S94	TI ((cultural* or linguistic* or language) N3 (service* or care or intervention* or message*)) OR AB ((cultural* or linguistic* or language) N3 (service* or care or intervention* or message*))
S93	TI (cultural* N1 (competen* or sensitiv* or appropriate)) OR AB (cultural* N1 (competen* or sensitiv* or appropriate))
S92	TI (((automat* or interactive*) N3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) N1 (response or recognition or messag* or system* or technolog*))) OR AB (((automat* or interactive*) N3 (telephon* or phone or phones or voice or hotline* or hot line*)) or ((voice or speech) N1 (response or recognition or messag* or system* or technolog*)))
S91	TI (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*) OR AB (touch screen or digital assistant* or pda or blackberry or mobile-device* or laptop* or notebook computer* or computer* or netbook*)
S90	TI (computer* N1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction)) OR AB (computer* N1 (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or assisted instruction))
S89	(MH "Software")
S88	(MH "Computer Systems+")
S87	TI ((electronic or e-) N1 (mail or prescri* or health or game*)) OR AB ((electronic or e-) N1 (mail or prescri* or health or game*))
S86	TI (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual N1 (reality or world or environment*))) OR AB (radio or television or audiovisual or video* or tape recording* or cassette* or cd-rom* or dvd* or motion picture* or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or short message* or text message* or i-pod* or ipod* or i-pad* or ipad* or mp3 player* or

(Continued)

	hotline* or answering service* or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare or (virtual N1 (reality or world or environment*)))
S85	TI ((print* N1 (material* or based)) or paper-based or written material* or (paper N1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or picture* or pictogram*) OR AB ((print* N1 (material* or based)) or paper-based or written material* or (paper N1 pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or picture* or pictogram*)
S84	TI ((mass or communication* or electronic or digital or multi or print* or social or new) N1 media) OR AB ((mass or communication* or electronic or digital or multi or print* or social or new) N1 media)
S83	TI (motivat* or incentive* or goal*) OR AB (motivat* or incentive* or goal*)
S82	TI (self-care or self-management) OR AB (self-care or self-management)
S81	TI ((social or community) N2 network*) OR AB ((social or community) N2 network*)
S80	TI (counsel*ing session* or ((support or peer or self-help or self-care) N2 (intervention* or group* or program*))) OR AB (counsel*ing session* or ((support or peer or self-help or self-care) N2 (intervention* or group* or program*)))
S79	TI (counsel* or ((social or carer* or caregiver* or care giver* or patient*) N1 support*) or psychosocial or ((social or pastoral or spiritual) N1 care) or religio* or chaplaincy or behavior modification or behaviour modification) OR AB (counsel* or ((social or carer* or caregiver* or care giver* or patient*) N1 support*) or psychosocial or ((social or pastoral or spiritual) N1 care) or religio* or chaplaincy or behavior modification or behaviour modification)
S78	TI (((inform* or message* or communicat* or effect* or gain or positive or negative) N2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) N1 (format* or presentation* or display*))) OR AB (((inform* or message* or communicat* or effect* or gain or positive or negative) N2 fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) N1 (format* or presentation* or display*)))
S77	TI ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) N2 inform*) OR AB ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) N2 inform*)
S76	TI (information* N3 (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)) OR AB (information* N3 (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*))
S75	TI ((improv* or increas* or enhanc* or patient) N3 (understanding or comprehension)) OR AB ((improv* or increas* or enhanc* or patient) N3 (understanding or comprehension))
S74	TI (educational status or literacy) OR AB (educational status or literacy)
S73	TI ((family or office or work* or school or faith or church) N3 based) OR AB ((family or office or work* or school or faith or church) N3 based)
S72	TI marketing OR AB marketing

(Continued)

S71	TI ((media N3 campaign*) or (promotion N1 program*) or (community based N3 intervention*) or (awareness N3 (rais* or increas*))) OR AB ((media N3 campaign*) or (promotion N1 program*) or (community based N3 intervention*) or (awareness N3 (rais* or increas*)))
S70	TI (self N1 (teaching or education or instruction)) OR AB (self N1 (teaching or education or instruction))
S69	TI ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) N1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)) OR AB ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) N1 (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*))
S68	(MH "Health Promotion+")
S67	TI ((health or patient or client) N3 (education or knowledge or promotion)) OR AB ((health or patient or client) N3 (education or knowledge or promotion))
S66	TI ((health or patient or client) N1 (education or knowledge or promotion)) OR AB ((health or patient or client) N1 (education or knowledge or promotion))
S65	TI ((professional or physician or doctor or clinician or nurse or provider) N1 (patient or client or family)) OR AB ((professional or physician or doctor or clinician or nurse or provider) N1 (patient or client or family))
S64	(MH "Physician-Patient Relations") OR (MH "Professional-Patient Relations+") OR (MH "Nurse-Patient Relations") OR (MH "Community-Institutional Relations")
S63	(MH "Interpersonal Relations+")
S62	TI (disclos* or trust* or truth* or deceiv* or deception or misinform*) OR AB (disclos* or trust* or truth* or deceiv* or deception or misinform*)
S61	TI (readability or intelligibility or credibility) OR AB (readability or intelligibility or credibility)
S60	TI (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating) OR AB (communicat* or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating)
S59	TI ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) N1 communication) OR AB ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) N1 communication)
S58	(MH "Communications Media+")
S57	(MH "Telephone") OR (MH "Wireless Communications")

(Continued)

S56	(MH "Reminder Systems")
S55	(MH "Communication+")
S54	(MH "Parental Attitudes+")
S53	S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51 or S52 or S54
S52	TI (child* or infant* or newborn* or neonat* or baby or babies or toddler or parent* or father* or woman or women or mother* or female*) OR AB (child* or infant* or newborn* or neonat* or baby or babies or toddler or parent* or father* or woman or women or mother* or female*)
S51	(MH "Female")
S50	(MH "Expectant Mothers")
S49	(MH "Women")
S48	(MH "Parents+")
S47	(MH "Perinatal Care")
S46	(MH "Infant Care")
S45	(MH "Child Care")
S44	(MH "Child") OR (MH "Child, Preschool") OR (MH "Infant") OR (MH "Infant, Newborn+")
S43	S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32 or S33 or S34 or S35 or S36 or S37 or S38 or S39 or S40 or S41 or S42
S42	TI (tetanus or diphtheria* or measles or rubella* or rubeola or mumps or epidemic parotit* or pertussis or whooping cough or polio* or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza* or hemophilus influenza* or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus* or MMR) OR AB (tetanus or diphtheria* or measles or rubella* or rubeola or mumps or epidemic parotit* or pertussis or whooping cough or polio* or infantile paralysis or tuberculosis or tuberculoses or hepatitis b or haemophilus influenza* or hemophilus influenza* or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus* or MMR)
S41	(MH "Tick-Borne Diseases")
S40	(MH "Yellow Fever")
S39	(MH "Encephalitis, Arbovirus")
S38	(MH "Rotavirus Infections")
S37	(MH "Community-Acquired Pneumonia") OR (MH "Pneumonia")
S36	(MH "Meningitis, Meningococcal") OR (MH "Meningitis, Pneumococcal")
S35	(MH "Pneumococcal Infections")
S34	(MH "Haemophilus Influenzae")
S33	(MH "Hepatitis B, Chronic") OR (MH "Hepatitis B")

(Continued)

S32	(MH "Tuberculosis") OR (MH "Tuberculosis, Pulmonary") OR (MH "Mycobacterium Tuberculosis")
S31	(MH "Poliomyelitis")
S30	(MH "Whooping Cough")
S29	(MH "Rubella")
S28	(MH "Mumps")
S27	(MH "Measles")
S26	(MH "Diphtheria")
S25	(MH "Tetanus")
S24	S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16 or S17 or S18 or S19 or S20 or S21 or S22 or S23
S23	TI ((tetanus or diphtheria* or pertussis or whooping cough or measles or mumps or rubella* or rubeola or mmr or polio* or tuberculosis or tuberculoses or bcg or calmette* or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus*) N1 vaccin*) OR AB ((tetanus or diphtheria* or pertussis or whooping cough or measles or mumps or rubella* or rubeola or mmr or polio* or tuberculosis or tuberculoses or bcg or calmette* or hepatitis b or haemophilus or triple or pneumococcal or meningococcal or yellow fever or japanese encephalitis or tick-borne encephalitis or rotavirus*) N1 vaccin*)
S22	TI ((tetanus or diphtheria) N1 toxoid) OR AB ((tetanus or diphtheria) N1 toxoid)
S21	(MH "Rotavirus Vaccines")
S20	(MH "Meningococcal Vaccines")
S19	(MH "Pneumococcal Vaccine")
S18	(MH "HIB Vaccine")
S17	(MH "Viral Hepatitis Vaccines") OR (MH "Hepatitis B Vaccines")
S16	(MH "BCG Vaccine")
S15	(MH "Poliovirus Vaccine, Oral") OR (MH "Poliovirus Vaccine, Inactivated") OR (MH "Poliovirus Vaccine")
S14	(MH "Rubella Vaccine")
S13	(MH "Mumps Vaccine")
S12	(MH "Measles Vaccine") OR (MH "Measles-Mumps-Rubella Vaccine")
S11	(MH "Pertussis Vaccine")
S10	(MH "Diphtheria-Tetanus-acellular Pertussis Vaccines") OR (MH "Diphtheria-Tetanus-Pertussis Vaccine") OR (MH "Diphtheria-Tetanus Vaccine")
S9	(MH "Diphtheria Toxoid")

(Continued)

S8	(MH "Tetanus Toxoid")
S7	S1 or S2 or S3 or S4 or S5 or S6
S6	TI (vaccinat* or revaccinat* or immuniz* or immunis* or immunother* or inoculat* or innoculat* or prophyla*) OR AB (vaccinat* or revaccinat* or immuniz* or immunis* or immunother* or inoculat* or innoculat* or prophyla*)
S5	(MH "Immunization Programs")
S4	(MH "Immunotherapy")
S3	(MH "Immunization, Secondary")
S2	(MH "Immunization Schedule")
S1	(MH "Immunization")

WHO Global Health Library – COMMVAC Search

Date searched: 26 July 2012

(immuniz* or immunis* or vaccin* or immunotherap* or inoculat* or innoculat* or prophyla*) and (child* or infant* or newborn* or neonat* or preschool* or "primary school*" or baby or babies or toddler* or parent* or mother* or father*) and (communicati* or face-to-face or messag* or verbal* or nonverbal* or written or writing or reading or language or speech or speak* or spoken or talk* or conversation* or voice or visual-perception or feedback or listen* or negotiat* or notify* or notification or remind* or narrat* or music* or humor or humour or humorous or adverti* or persua* or interpreting or interpreters or interpret*-service or translat* service* or translating or disclos* or trust* or truth* or deceiv* or deception or misinform* or participation or advocacy or consumer* or empower* or (decision and (making or support or aid*)) or (informed and (consent or choice* or decision*)) or (radio or television or audiovisual or video* or "tape recording*" or cassette* or cd-rom* or dvd* or "motion picture*" or movie* or cinema* or multimedia or hypermedia or telephon* or phone or phones or sms or "short message*" or "text message*" or i-pod* or ipod* or i-pad* or ipad* or "mp3 player*" or hotline* or "answering service*" or internet or web* or online or on-line or blog* or telemedicine or telehealth or telecare) or ((health or patient or client) and (education or knowledge or promotion)) or ((education* or teaching or learning or instruction* or training or skills or online or web* or internet or video* or multimedia or multi-media) and (intervention* or session* or course* or program* or material* or package* or module* or demonstration or method* or process*)) or (((inform* or message* or communicat* or effect* or gain or positive or negative) and fram*) or ((verbal or oral or written or text or data or numerical or statistical or visual or graphic* or pictorial or audio* or video* or multimedia or multi-media or narrative) and (format* or presentation* or display*))) or (counsel* or ((social or carer* or caregiver* or "care giver*" or patient*) and support*) or psychosocial or ((social or pastoral or spiritual) and care) or religio* or chaplaincy or "behavior modification" or "behaviour modification") or ("counsel*ing session*" or ((support or peer or self-help or self-care) and (intervention* or group* or program*))) or motivat* or incentive* or goal* or ((mass or communication* or electronic or digital or multi or print* or social or new) and media) or ((media and campaign*) or (promotion and program*) or ("community based" and intervention*) or (awareness and (rais* or increas*))) or ("educational status" or literacy) or ((improv* or increas* or enhanc* or patient) and (understanding or comprehension)) or ((patient or client or health or medical or drug or written or print* or visual* or provid* or present*) and inform*) or ((print* and (material* or based)) or paper-based or "written material*" or (paper and pen*) or publication* or newsletter* or brochure* or booklet* or pamphlet* or leaflet* or flyer* or handout* or poster* or illustrat* or picture* or pictogram*) or ((social or community) and network*) or marketing or ((mass or communication* or electronic or digital or multi or print* or social or new) and media) or ((cultural* or linguistic* or language) and (service* or care or intervention* or message*)) or (cultural* and (competen* or sensitiv* or appropriate)) or ((patient or person or family or client) and (cent*red or focus*ed or oriented)) or (therapeutic and (relation* or alliance*)) or (information* and (service* or center* or centre* or system* or dissemination or seeking or retrieval or transfer* or campaign* or provision or aid or material* or sheet* or pack*)) or (computer* and (system* or network* or program* or terminal* or interfac* or interact* or handheld or intervention* or therapy or graphic* or simulation* or searching or mediated or based or tailored or communication or "assisted instruction")) or ("touch screen" or "digital assistant*" or pda or blackberry or mobile-device* or laptop* or "notebook computer*" or computer* or netbook*) or (((automat* or interactive*) and (telephon* or phone or phones or voice or hotline* or "hot line*")) or ((voice or speech) and (response or recognition or messag* or system* or technolog*))) or ((health or patient* or mediated or facilitated or augmentative or alternative or total or simultaneous or manual or mass or face-to-face or one-to-one or one-on-one or oral or cultural or risk or intervention* or interaction* or program* or skill* or aid* or tool* or board* or device* or system* or barrier*) and communication) or (readability or intelligibility or credibility) or ((professional or physician or doctor or clinician or nurse or provider) and (patient or client or family)) or (self and (teaching

or education or instruction)) or ((family or office or work* or school or faith or church) and based) or ((electronic or e-) and (mail or prescri* or health or game*)) or (self-care or self-management))

ERIC (ProQuest)

Searched: 12 July 2012

ALL(vaccinat* or revaccinat* or immuniz* or immunis* or immunother* or inoculat* or innoculat* or prophyla*) AND ALL(randomis* or randomiz* or randomly or intervention* or control* or compar* or evaluat* or "time series" or pretest or posttest or "pre test" or "post test" or impact or chang* or effect* or experiment* or "repeated measure" or "repeated measures")

Grey Literature Searches

ICTRP

Using the 'Advanced search' function, the following was used in each field (truncation symbol * is not necessary). You may want to tick box to restrict to *clinical trials in children*

Title: vaccin OR immuniz OR immunis OR immunother OR inoculat OR innoculat

Intervention: educat OR inform OR promot OR knowledge OR attitude OR teach OR instruct OR train OR session OR face to face OR communicat OR discuss OR negotiate OR remind OR counsel OR persuad

Result: 111 records altogether (or 47 records when records were restricted to *children in clinical trials)*

ClinicalTrials.gov

(vaccine OR vaccination OR vaccinated OR vaccinate OR immunise OR immunised OR immunising OR immunisation OR immunize OR immunizing OR immunized OR immunization AND (educate OR education OR teach OR teaching OR train OR training OR instruction OR inform OR information OR promotion OR promote OR communication OR knowledge OR attitude OR session OR face to face OR negotiation OR persuasion OR persuade OR discuss OR discussion)

Result: 89 trials

Open Grey

(vaccin* OR immunis* OR immuniz* OR immunotherap* OR inoculat*) AND (child* OR infant* OR parent* OR mother* or father* OR famil*) AND (educat* OR teach* OR train* OR instruct* OR inform* OR promot* OR persua* OR influenc* OR explain* OR advis* OR counsel* OR communicat* OR knowledge OR understand* OR attitude* OR session* OR campaign* OR messag* OR adverti* OR visit* OR "face to face" OR verbal* OR personal* OR individual* OR meeting* OR peer* OR "health* aide*" OR "health*-worker*" OR "community-based" OR "family-based" OR "school-based" OR "work*-based" OR "church-based" OR intervention* OR remind* OR negotiat*)

Result: 16 records

Grey Literature Report

The Grey Literature Report was searched on 29 August 2012 using different search terms:

“Vaccination communication” = 37 hits, 1 excluded at FT

“Vaccine communication” = 37 hits, 2 excluded at FT

“Immunization communication” = 19 hits, 1 excluded at FT

“Immunization education” = 14 hits, 2 excluded at FT

“Vaccination education” = 16 hits, 3 excluded at FT

“Vaccine education” = 16 hits

“Face to face vaccination” = 8 hits

“Face to face vaccine communication” = 3 hits

“Face to face vaccine education” = 1 hit

“Verbal vaccine information” = 0 hits

“Verbal vaccine education” = 0 hits

“Verbal immunization communication” = 0 hits

“Verbal immunization education” = 0 hits

“Parental vaccination education” = 1 hit, 1 excluded at FT

“Parental vaccination communication” = 1 hit

“Vaccination education session” = 0 hits

“Vaccine education session” = 0 hits

“Immunization education session” = 0 hits

“Vaccination information session” = 0 hits

“Vaccine information session” = 0 hits

“Interpersonal vaccine communication” = 0 hits

“Interpersonal vaccine information” = 0 hits

“Interpersonal immunization education” = 0 hits

CONTRIBUTIONS OF AUTHORS

Ingvil Sæterdal (IS) and Simon Lewin (SL) drafted the protocol for the review with methodological and content-specific input from the rest of the authors. IS and SL and Susan Munabi-Babigumira (Background) drafted the review with input from the other authors. Claire Glenton drafted the plain language summary. All authors participated in the inclusion and assessment of the literature and in drafting the summary of findings.

DECLARATIONS OF INTEREST

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Simon Lewin and Claire Glenton are editors for the Cochrane Consumers and Communication Review Group. They did not have any influence over the Review Group's editorial process or decision to publish this review.

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DIFFERENCES BETWEEN PROTOCOL AND REVIEW

In the protocol (Saeterdal 2012), unintended adverse effects due to the intervention were listed as a secondary outcome. In the review, these are listed as a primary outcome, as per Cochrane recommendations.

INDEX TERMS

Medical Subject Headings (MeSH)

*Health Knowledge, Attitudes, Practice; Health Education [*methods]; India; Information Dissemination [*methods]; Pakistan; Parents [*education]; Randomized Controlled Trials as Topic; Vaccination [*statistics & numerical data]

MeSH check words

Child; Child, Preschool; Humans; Infant