

Evidence tables for studies reporting knowledge, attitudes, values and beliefs

Evidence table for studies reporting knowledge, attitudes, values and beliefs of Primary Vaccines and Primary Booster Vaccine

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p>(Alderson et al. 1997)</p> <p><b>Title:</b> Childhood immunization: meeting targets yet respecting consent</p> <p><b>Year:</b> 1997</p> <p><b>Journal:</b> European Journal of Public Health</p> <p><b>Volume:</b> 7</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> B</p>	<p><b>What was/were the research questions:</b> What are practitioners' views about the potential contradiction between respecting parental consent and meeting immunisation targets.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Tape recorded semi-structured interviews (45-60 minutes). Experienced qualitative interviewers recruited by research team, undertook 2 half-day specialist training sessions. Lack of details given about setting, except that interviewees took place in the working day (implies in the practitioners workplace). Research took place in 1993-94.</p>	<p><b>What population were the sample recruited from:</b> Primary care practitioners (GPs, Community medical officers, health visitors, practice nurses, managers, minority group advocate).</p> <p><b>How were they recruited:</b> Convenience sampling</p> <p><b>How many participants were recruited:</b> 58 18 GPs 9 Community Medical Officers (CMOs) 16 Health Visitors (HVs) 12 Practice Nurses (PNs) 2 Managers 1 minority groups advocate</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> Aimed to get interviewees from three areas: inner-city, suburban and rural</p> <p><b>Other details:</b> Average (mean) length of time participants had worked in child immunisation = 7.8</p>	<p><b>Brief description of method and process of analysis:</b> SPSS for background indications of common viewpoints. Qualitative analysis of transcripts (no details given).</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> About half (n=27) thought that government policy (e.g. rewarding GPs for higher immunisation rates) improved rates.</p> <p><u>Setting differences – views on parents compliance</u></p> <ul style="list-style-type: none"> <li>• Rural areas – most likely to comply</li> <li>• Suburban – more likely to question more and perhaps dissent.</li> <li>• Inner-city – more likely to default or not cooperate due to moving house a lot or lack of English skills.</li> </ul> <p><u>Conflicts and consent</u></p> <ul style="list-style-type: none"> <li>• A third had experienced conflict between duty to protect the child with immunisation and duty to respect parents' views.</li> <li>• &gt; a third said that parents made wise choices.</li> <li>• Some (n=20) thought parents were only wise if they agreed with health professionals.</li> <li>• Most (n=45) thought that the decision should ultimately be the parents' <ul style="list-style-type: none"> <li>○ <i>"It's a benefit-risk assessment. They make a decision for perfectly valid reasons. Valid doesn't necessarily mean scientifically correct... you really have to have thought your reasons out...It would be wrong if professionals ultimately decided. You come to me for advice, for a consultation, not a dictation". (GP)</i></li> </ul> </li> </ul>	<p><b>Limitations identified by author:</b> Those who chose to participate likely to be more interested than average in immunisation. Non-representative sample.</p> <p><b>Limitations identified by review team:</b></p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> Health Education Authority</p>

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		(range of <1 to 30).	<p><u>Information, coercion and consent</u></p> <ul style="list-style-type: none"> <li>• Over half (n=34) felt that they gave reasonable amounts of information to parents for informed consent. However, others (n=16) stated lack of time as a barrier. Some felt that if they gave too much information it would alarm otherwise compliant parents, or felt under pressure from colleagues not to discuss consent too much.</li> <li>• Some professionals used direct or indirect pressure to get parents to comply <ul style="list-style-type: none"> <li>○ <i>“My duty is to the child, and not to have the child immunised because of grandmother’s prejudice is unacceptable as far as I’m concerned. We don’t get parents to sign. I sign over the stamp we have. When new parents join, we have all the immunisation forms given to us and we won’t register a child without them...”</i> (GP)</li> <li>○ <i>“When they’re not sure, I say it’s their choice, but I ask how they’d cope if their baby got whooping cough. Most feel they wouldn’t be able to manage. I always give them plenty of time.”</i> (HV)</li> </ul> </li> <li>• None felt that professionals should have the right to decide without parental consent. However, conversely some thought that the state should make it compulsory, e.g. for school admittance.</li> <li>• Some got written consent from parents but most relied on implied consent (i.e. parents showing up for appointments).</li> <li>• Nearly half (n=27) thought that parental consent was beneficial for parents, children and the parent-professional relationship. Some sore the opportunity to discuss immunisation as an important part of building relationships with patients and their families.</li> <li>• There were mixed, often unresolved, views on</li> </ul>	

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			<p>whether opportunistic immunisations were a good idea or a breach of civil liberties.</p> <ul style="list-style-type: none"> <li>The need for improving understanding and communication skills between professionals and parents was raised.</li> </ul>	
<p>(Bedford, Masters, &amp; Kurtz 1992)</p> <p><b>Title:</b> Immunisation status in inner London primary schools</p> <p><b>Year:</b> 1992</p> <p><b>Journal:</b> Archives of Disease in Childhood</p> <p><b>Volume:</b> 67</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> B</p>	<p><b>What was/were the research questions:</b> The feasibility of reviewing children's immunisation status at school entry. Exploring attitudes to the provision of immunisation in schools.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p>School nurses completed a questionnaire with parents, with assistance of interpreter if necessary (although in some cases an interpreter was not available n=79).</p> <p>School nurses and head teachers in the area also filled in anonymous questionnaires.</p> <p>Inner-city deprived area, sample included 11% living in temporary accommodation, 21% single parent families, 39% spoke a language other than English at home, large number of new immigrants. Study took place from September 1989 to December 1990.</p>	<p><b>What population were the sample recruited from:</b> Parents of primary school children in schools in the inner city health district where the study took place. All School nurses in the district and all head teachers.</p> <p><b>How were they recruited:</b> Parents as part of the school entry health interview, School nurses and head teachers were sent a questionnaire in the mail.</p> <p><b>How many participants were recruited:</b> information gathered for 1,411 children at school health interview. 12 out of 15 school nurses took part and 31 out of 33 head teachers.</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p> <p><b>Other details:</b> Most (84%) of</p>	<p><b>Brief description of method and process of analysis:</b> NR</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <p>Drop-off/incomplete immunisation a problem. E.g. According to parents 92% had had 1<sup>st</sup> Diphtheria vaccine, 89% had had 3<sup>rd</sup> and 67% had had booster.</p> <p><u>Parents' reasons for inadequate immunisation (n=457, 32%)</u></p> <ul style="list-style-type: none"> <li>Recent immigration, 27%</li> <li>For pertussis, fear of side effects, 13%</li> </ul> <p><u>Parents' reasons for no immunisation (n=54, 4%)</u></p> <ul style="list-style-type: none"> <li>Recent immigration (n=41)</li> <li>Unaware of need for immunisation (n=7, also immigrant families)</li> <li>Not believing in immunisation or fear of side effects (n=6)</li> </ul> <p><u>Attitudes to provision of immunisation in schools</u></p> <ul style="list-style-type: none"> <li>69% of parents whose children were not fully immunised were in favour of school-based immunisation.</li> <li>All school nurses generally opposed to school-based immunisation, 8 of 12 said they would not carry out immunisation under any circumstances. <ul style="list-style-type: none"> <li>3 of 12 said it could be appropriate as a last resort.</li> </ul> </li> </ul>	<p><b>Limitations identified by author:</b> Estimates based on parental information on immunisation uptake likely to be an overestimate.</p> <p><b>Limitations identified by review team:</b> Concerns about data collection in context of school health interview. May parents feel pressurised into giving answers they think the school will approve of?</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> Action Research</p>

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		<p>parents were seen in their child's first year in school.</p> <p>Ethnically diverse sample: white and UK origin, 32%; Asian, mostly Bangladeshi, 27%; black, over half African origin, 12%. BME disproportionately likely to be living in temporary accommodation.</p>	<ul style="list-style-type: none"> <li>○ It was felt that adequate provision already existed in GP surgeries etc.</li> <li>○ 7 of 12 said that school was not an appropriate place for immunisation, as it was disrupt classes and children would associate school with injections. Also, that there was a lack adequate facilities such as waste disposal.</li> <li>● School nurses did not see immunisation as fulfilling a health education role.</li> <li>● Only 3 of 12 felt adequately trained to give immunisation.</li> <li>● Head teachers <ul style="list-style-type: none"> <li>○ 20 of 29 would be willing to include a question on immunisation in routine admissions procedure.</li> <li>○ 19 of 20 were prepared to recommend that parents have their children fully immunised before school entry.</li> <li>○ 15 of 31 thought that immunisation should be offered opportunistically at the school health interview.</li> <li>○ 16 of 31 thought a special immunisation clinic should be provided at school.</li> <li>○ Head teachers who opposed school-based immunisation gave similar reasons as school nurses.</li> </ul> </li> </ul>	
<p>(Bedford &amp; Lansley 2006)</p> <p><b>Title:</b> Information on childhood immunisation: parents' views</p>	<p><b>What was/were the research questions:</b> Parents' views on information about immunisation</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p>	<p><b>What population were the sample recruited from:</b> Parents of all children between 18-24 months selected from the Child health computer system (CHS) for the Three PCTs in East Berkshire (n=2,326).</p>	<p><b>Brief description of method and process of analysis:</b> NR</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> 89% fully immunised. Of the 80 parents whose children weren't fully immunised, 71 had omitted MMR.</p> <p><u>Sources of information</u></p>	<p><b>Limitations identified by author:</b> non respondents more likely to be only partially immunised, estimated from CHS data (p&lt;0.0001).</p> <p><b>Limitations identified by review team:</b></p>

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<p><b>Year:</b> 2006</p> <p><b>Journal:</b> Community Practitioner</p> <p><b>Volume:</b> 79 (8)</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> B</p>	<p>Postal questionnaire with reply-paid envelope and explanatory letter. Non-respondents followed up after one month by further letter, questionnaire and envelope. Questionnaire a combination of closed and open questions. Piloted in Oxfordshire and carried out in East Berkshire.</p>	<p><b>How were they recruited:</b> GPs and HVs consulted about whether parents in population could be sent a questionnaire.</p> <p><b>How many participants were recruited:</b> 859, response rate of 38%.</p> <p><b>Were there specific exclusion criteria:</b> children who had moved out of area, or whose GP did not agree to the study (1 GP), n=73</p> <p><b>Were there specific inclusion criteria:</b> NR</p> <p><b>Other details:</b></p>	<p>Most important: HV (76%), NHS leaflets (63%), friends (39%), and television (42%). Only 2% said they had no information at all.</p> <p><u>Satisfaction with information</u> 70% satisfied 20% not satisfied. Parents of fully immunised children were more likely to be satisfied than other parents (p&lt;0.0001). Reasons for dissatisfaction included: information not being sufficient (55% of those dissatisfied); distrust of health professionals information (17%); conflicting information (12%). 2% said their GP had refused to discuss the issue 'properly'.</p> <p><u>Views on information from HVs and GPs</u> 65% felt that the HV was able to answer most questions about immunisation, 25% disagreed. 69% felt their GP was able to answer most questions.</p> <p><u>Timing of information</u> 32% wanted information before the baby's birth. 41% felt that first HV's call was the best time. 33% felt that 6-8 week check was the best time. Patients want information on an ongoing basis.</p>	<p>Lack of information about analysis.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> Wyeth</p>
<p>(Condon 2002)</p> <p><b>Authors:</b> Condon</p> <p><b>Title:</b> Maternal attitudes to preschool immunisations</p>	<p><b>What was/were the research questions:</b> What are the maternal attitudes towards infant vaccinations amongst ethnic minority groups?</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p>	<p><b>What population were the sample recruited from:</b> Pakistani, Somali or Afro-Caribbean mothers of children aged 16 months to 3 years. Inner-city (Bristol), UK.</p> <p><b>How were they recruited:</b> by local linkworkers (members of ethnic community employed</p>	<p><b>Brief description of method and process of analysis:</b> Not much detail given. Just states 'resultant data was analysed thematically' p183.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <p><u>Attitudes and knowledge</u></p> <ul style="list-style-type: none"> <li>All women had a positive view towards immunisation. Severity and child susceptibility to infectious diseases</li> </ul>	<p><b>Limitations identified by author:</b> Lack of consensus of views from Afro-Caribbean participants may be because they were only interviewed. They did not take part in focus groups too. Setting of the health centre for focus groups and the</p>

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<p>among ethnic minority groups</p> <p><b>Year:</b> 2002</p> <p><b>Journal:</b> Health Education Journal</p> <p><b>Volume:</b> 61 (2)</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> B</p>	<p>Interviews and focus groups. Focus groups held at an inner-city health centre, interviews held at interviewee's homes. Research took place between November 2000 and March 2001 (i.e. post Wakefield et al's MMR article). Local linkworkers (health interpreters/advocates) carried out research in Pakistani, English and Somali. For the focus groups the participants were given lunch, taxi transport and a crèche was provided. Focus groups were carried out in two groups: Pakistani, and Somali. Afro-Caribbean participants only took part in individual interviews.</p> <p>One linkworker led the focus groups another took detailed notes, which were then translated into English.</p>	<p>as interpreters/advocates by a Bristol health voluntary agency).</p> <p><b>How many participants were recruited:</b> 21 (Pakistani 11, Somali 5, Afro-Caribbean 5).</p> <p><b>Were there specific exclusion criteria:</b> people linkworkers thought would not actively contribute to group discussion.</p> <p><b>Were there specific inclusion criteria:</b> 'visible ethnic minorities' (Pakistani, Somali or Afro-Caribbean), mothers of children aged 16 months to 3 years.</p> <p><b>Other details:</b> although not invited two grandmothers took part in the Pakistani focus group.</p> <p>Most participants had low-level or no educational qualifications.</p> <p>Pakistanis and Somalis had been in the UK for a range of 3 months to 45 years (Pakistan average 11 years, Somali average 3 years).</p>	<p>seen as high by all.</p> <ul style="list-style-type: none"> <li>• Some were aware of the MMR media debate (those with better English skills) but were still positive about immunisation.</li> <li>• No one knew a child who had suffered an adverse reaction to a vaccine.</li> <li>• All groups saw immunisation as carrying some risk but saw infectious diseases as more risky.</li> <li>• Somali and Pakistani women saw risk as inherent in a life where Allah is all powerful. <ul style="list-style-type: none"> <li>○ <i>"If you have good care you can live long, if Allah says so as well"</i> (Somali focus group).</li> <li>○ However, they also had universally favourable views of health professionals.</li> <li>○ <i>"The decision is made in the family – following medical advice"</i> (Pakistani focus group).</li> </ul> </li> <li>• Some Afro-Caribbean and Somali women had been under some pressure from health care providers to immunise their children. However, this was seen as something in their best interests. <ul style="list-style-type: none"> <li>○ <i>"Government will take care of people 100%...if Tony Blair says I must have [immunisation for children] or if the doctor says, I would have"</i> (Somali interview).</li> <li>○ 4 out of 5 Afro-Caribbean interviewees thought that vaccination should be a condition for school entry.</li> </ul> </li> <li>• Somalis who had undertook secondary migration to the UK from other countries (e.g. Kenya, Netherlands) expressed confusion over immunisation schedules.</li> <li>• Afro-Caribbean women were critical of the quality of immunisation information leaflets, which they saw as non-inclusive of ethnic minorities (linguistically and pictorially – i.e. concerns about how to recognise a</li> </ul>	<p>ethnicity of the researcher (white) may have influenced opinions of the participants.</p> <p><b>Limitations identified by review team:</b> Small sample. Assumption that 'ethnic groups' are internally homogenous. In reality there may be sub-groups and differences e.g. between black British and black Caribbean, between Somali clans, between Pakistani ethno-linguistic groups. Lack of detail about analysis of data.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Connections between ideas about immunisation and spiritual viewpoints/general risk tolerance.</p> <p><b>Source of funding:</b> NR</p>

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		Those in the Afro-Caribbean group were born in the UK.	meningitis rash on black skin). <ul style="list-style-type: none"> <li>For some even a translated leaflet was not suitable due to low literacy levels.</li> <li>Pakistani women said that the decision to vaccinate would be a family one. Somali and Afro-Caribbean women laughed at the idea of husbands or partners taking part in a decision about children's health.</li> <li>There was no interest in non-Western medicine.</li> </ul>	
<p>(Cunninghame, Charlton, &amp; Jenkins 1994)</p> <p><b>Title:</b> Immunization uptake and parental perceptions in a strictly orthodox Jewish community in north-east London</p> <p><b>Year:</b> 1994</p> <p><b>Journal:</b> Journal of Public Health Medicine</p> <p><b>Volume:</b> 16</p> <p><b>Quality score:</b> (+)</p>	<p><b>What was/were the research questions:</b> (1) ascertain the uptake of immunisation uptake in strictly orthodox-Jewish community (2) reasons for non uptake (3) attitudes to immunisation and immunisation services in this community</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p>Standardised questionnaires administered by one researcher at home, by telephone and post. Included closed questions, open questions and Likert scales. Interview times to suit parents and for home interviews both parents involvement were encouraged. Family doctor immunisation records examined by researcher to determine uptake of immunisation at 6 months and 24 months for Diphtheria, Pertussis and MMR</p>	<p><b>What population were the sample recruited from:</b> orthodox-Jewish children aged under 2.5 years in area (parents of 575 children identified and 100 randomly selected)</p> <p><b>How were they recruited:</b> Identified by 3 Jewish doctors.</p> <p><b>How many participants were recruited:</b> 67 questionnaires completed. Those who declined (n=21) stated reasons 'too busy' (n=15), 'don't want to participate' (n=4), other (n=2).</p> <p><b>Were there specific exclusion criteria:</b> parents who weren't able to complete study (n=7)</p> <p><b>Were there specific inclusion criteria:</b> confirmation of orthodox Jewish household by looking for a <i>mezuzah</i> outside front</p>	<p><b>Brief description of method and process of analysis:</b> NR</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <p>1. <u>Immunisation uptake</u> Similar uptake of immunisation to that reported in the District COVER data. No significant difference between responders and non-responders.</p> <p>2. <u>Non uptake</u> 16 parents answered a question on reason for their children's missed immunisation. Most common explanation was parental decision to delay immunisation most often MMR</p> <p>3. <u>Attitudes</u> All parents judged immunisation for their children 'very important' or 'important'. 'Most' parents thought measles to be 'very serious' or 'serious illness' and that there is no effective protection measures other than immunisation and that isolation of infected children is impractical. Even children whose parents described disease as 'mild' had 78% uptake. Parents rated immunisation services positively though additional open response comments 34% of parents made negative statements. 'Inconvenience of clinic hours' main complaint. Suggestions for improvements included better information from family doctors acknowledging side effects, reducing clinic waiting</p>	<p><b>Limitations identified by author:</b> conservative in its estimate of the proportion of fully immunised orthodox Jewish children compared with the District population</p> <p><b>Limitations identified by review team:</b> lack of detail on methods of analysis.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> More information about immunisation and improvements in access and facilities for their children.</p> <p><b>Source of funding:</b> King's Fund small grant</p>

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<b>Applicability score</b> B		door  <b>Other details:</b> NR	time, improving play facilities and reducing overcrowding.	
<p>(Sutton &amp; Gill 1993)</p> <p><b>Authors:</b> Gill and Sutton</p> <p><b>Title:</b> Immunisation uptake: the role of parental attitudes</p> <p><b>Year:</b> 1993</p> <p><b>Journal:</b> book chapter in 'Immunisation research: a summary volume'</p> <p><b>Volume:</b> published by Health Education Authority, London</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability</b></p>	<p><b>What was/were the research questions:</b> Find out information on parent's attitudes and beliefs. Compare parents of children who had been fully immunised with those whose children were not fully immunised.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p>Structured interviews carried out in the respondents' homes. The study was carried out in two contrasting London districts, West Lambeth and Bromley. West Lambeth is a deprived inner-city area with a relatively low immunisation uptake. Bromley is a more affluent suburban/rural district with a high immunisation uptake.</p>	<p><b>What population were the sample recruited from:</b> parents/carers of children aged 8-25 months in West Lambeth and Bromley.</p> <p><b>How were they recruited:</b> sample generated through official immunisation records generated by the SE Thames Regional Computing Bureau. Response rate 57% in West Lambeth, 68% in Bromley. Recruitment of individuals NR.</p> <p><b>How many participants were recruited:</b> 759</p> <p>94% of respondents were mothers, 4% fathers, 2% other e.g. guardian/carer.</p> <p>Mean age 30 years (range 15-54).</p> <p><b>Were there specific exclusion criteria:</b> 20 addresses deemed too unsafe for interviewers to visit.</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><b>Brief description of method and process of analysis:</b> NR</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> [n.b. some associations are reported as 'significant' in the study but no further information regarding p-values are given].</p> <p><u>Significant associations between variables</u></p> <ul style="list-style-type: none"> <li>• Owner-occupiers more likely to be completers than non-completers.</li> <li>• Those working part-time more likely to be completers.</li> <li>• Those who left full-time education at a younger age more likely to be non-completers.</li> <li>• Those who had been at their current address less than 2 years more likely to be completers (surprising).</li> <li>• Not significant: ethnicity, country of birth, country of child's birth, socio-economic group, age of respondent and age of target child.</li> </ul> <p><u>Reasons for non-completion</u></p> <ul style="list-style-type: none"> <li>• Non-completion strongly associated with family understanding of child's existing health problems (e.g. asthma, allergies, fits) and negative parental experiences with health professionals.</li> </ul> <p><u>Fear of side effects</u></p> <ul style="list-style-type: none"> <li>• 24% thought the pertussis vaccine was safe, 6% thought it very risky.</li> <li>• Fear that immunisation might set off or interact with health problems such as eczema, allergies .etc was the most prevalent reason for not immunising against</li> </ul>	<p><b>Limitations identified by author:</b> Using official (central) data to create samples will always miss some children.</p> <p>'Social desirability bias' may affect parental reporting of immunisation uptake.</p> <p><b>Limitations identified by review team:</b> No information about recruitment of individual respondents or methods of analysis. No information about meaning of 'significant' in this study.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Why those working part-time were more likely to be completers. More research needed about the role of homeopathy.</p> <p><b>Source of funding:</b> NR</p>



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score B		<p><b>Other details:</b> Respondents divided into two groups based on the target child's immunisation status: 'completers' and 'non-completers'. Completion of pertussis immunisation used as a proxy to discuss all immunisations.</p>	<p>pertussis.</p> <ul style="list-style-type: none"> <li>Few parents were worried about MMR compared to Hib.</li> </ul> <p><u>Information/knowledge</u></p> <ul style="list-style-type: none"> <li>25% did not want future children to have the Hib vaccine. It was perceived as 'untried and untested'.</li> <li>42% said they would like more information about immunisation, particularly regarding side effects and long-term risks.</li> <li>Many parents felt they were not properly informed and wanted more information so they could gauge whether a child's reaction to a vaccine was normal or abnormal.</li> <li>Television most popular source of information about immunisation, followed by leaflets and posters in medical settings.</li> </ul> <p><u>Parents perception of provider attitudes</u></p> <ul style="list-style-type: none"> <li>'Substantial minority' had received no information from HVs about immunisation. 25% were not able to identify their HVs attitude to immunisation.</li> <li>37% had received verbal advice from their GPs</li> <li>17% could remember receiving written information.</li> <li>Some felt that GPs had a financial interest and were therefore biased.</li> <li>Those dissatisfied with their last immunisation visit were twice as likely to say there were immunisations they would not want a future child to have.</li> </ul> <p><u>Immunisation setting preferences</u></p> <ul style="list-style-type: none"> <li>Wide range of responses given.</li> <li>25% would prefer at home, by a HV.</li> </ul> <p><u>Differences between completers and non-completers</u></p> <ul style="list-style-type: none"> <li>The two groups differed in their beliefs about immunisations but not in their beliefs about diseases.</li> </ul>	

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			<ul style="list-style-type: none"> <li>○ Non-completers less convinced about safety of vaccines and attached less importance to immunisations.</li> <li>○ Both groups similar in terms of their ratings of severity and incidence of vaccine-preventable diseases.</li> <li>● Lack of demographic differences between groups (e.g. ethnicity, marital status, age of mother .etc)</li> <li>● Non-completers likely to have more faith in herbal medicine</li> </ul> <p><u>Immunisation dissenters</u></p> <ul style="list-style-type: none"> <li>● 3 out of a 100 non-completers gave the reason for non-completion as not believing in immunisation.</li> <li>● 92% of non-completers thought completion important.</li> </ul>	
<p>(Hilton, Hunt, &amp; Petticrew 2006)</p> <p><b>Title:</b> Gaps in parental understandings and experiences of vaccine-preventable diseases: a qualitative study</p> <p><b>Year:</b> 2006</p> <p><b>Journal:</b> Child: care, health and development</p> <p><b>Volume:</b> 33 (2)</p>	<p><b>What was/were the research questions:</b> To explore parents' understanding of vaccine-preventable diseases. To explore the role of first and second hand experiences in parents' assessments of their severity.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR but use of 'constant comparative method' for analysis implies grounded theory.</p> <p>18 focus groups carried out in Scotland between November 2002 and March 2003. Groups were purposively selected to gain maximum variation in terms of socio-economic status and area baseline</p>	<p><b>What population were the sample recruited from:</b> Parents of children aged 6 and below</p> <p><b>How were they recruited:</b> Through appropriate gatekeepers (e.g. co-ordinators of Saturday clubs, family resource unit, National Autistic Unit, private health clinic.etc)</p> <p><b>How many participants were recruited:</b> 66 parents (58 mothers and 8 fathers).</p> <p><b>Were there specific exclusion criteria:</b> NR</p>	<p><b>Brief description of method and process of analysis:</b> Analysed using the 'constant comparative method' with particular attention was paid to deviant cases to explore reasons for contradictory/unusual views. Software NVivo was used to assist in organising and retrieving data.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Overall parents lacked knowledge about vaccine-preventable diseases, their severity, and in some cases how they were transmitted.</p> <p><u>Severity</u> Menigitis C was most commonly cited as the most serious of the diseases discussed (out of menigitis C, measles, mumps, rubella, diphtheria, tetanus, pertussis, polio and Hib). Many parents referred to the speed at which illness developed and the difficulty of diagnosis. Almost all were aware of the media campaign and many saw the campaign as proof that 'experts' were concerned about Meningitis C.</p>	<p><b>Limitations identified by author:</b> limitations general to qualitative research, e.g. not representative.</p> <p><b>Limitations identified by review team:</b> No information about educational background/qualification of participants.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> Medical Research Council, Scottish</p>

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<p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> B</p>	<p>immunisation uptake.</p> <p>Two postcode sectors chosen with high MMR uptake (&gt;95%) according to the Scottish Standard Immunization Recall System. Two chosen with low MMR uptake (&lt;75%). Within each uptake category one postcode selected that represented an affluent area and one a deprived area. Thus, research took place in 4 postcode sectors with different socio-economic and uptake characteristics. Variation was also sought across family circumstances (e.g. single parents) and level of parenting experience (e.g. first time parents). Variation was also sought in terms of immunisation choices, i.e. one group of parents who had chosen single vaccines instead of MMR combined, one group who had rejected all vaccines. Also, some special interest groups were selected e.g. parents of children with autism and parents of immuno-compromised children.</p> <p>The groups were facilitated by one of the researchers, recorded and transcribed in full.</p>	<p><b>Were there specific inclusion criteria:</b> see column on research parameters (left) for inclusion of certain groups.</p> <p><b>Other details:</b></p>	<p>Other diseases had mixed responses regarding their severity, where some parents had had the illness themselves (pertussis, mumps and measles) the severity was seen as lower because they perceived that they had not been very ill with it and had not had long-term effects.</p> <p><i>“I’ve had measles and mumps when I’ve been... I was younger and I’ve not had any... and I don’t know any... all my peers all had measles almost and have survived and I... I’m not sure of the seriousness of it...”</i> (mother, group who rejected MMR).</p> <p><i>“I was one of the children that got whooping cough, but you know it hasn’t done me any harm”</i> (father, group who opted for single MMR vaccines).</p> <p>None of the diseases covered by the pentavalent vaccine (pertussis, diphtheria, polio, Hib, tetanus) were consistently considered a major or immediate threat in the UK.</p> <p><u>Knowledge</u> The focus groups suggest that there are considerable knowledge gaps in parents’ ideas about vaccine-preventable diseases, particularly those that had not been part of a sustained media campaign.</p> <ul style="list-style-type: none"> <li>Confusion between measles and German measles: <i>“they give you this funny mixed message,... they say ‘the MMR, measles is a dreadful disease...’ but then if you actually research into it a wee bit further, you’d discover... that it’s not the measles that they’re actually worried about, it’s the German measles, rubella, that’s what they really want you to take it for. But it’s almost like they’ve got this scare tactic, we’ll frighten them into getting it because of measles... They’re not going to do it for rubella...they’ve combined it in this nice convenient package...”</i> (mother, group who rejected MMR).</li> </ul>	<p>Executive Department of Health.</p>

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			<ul style="list-style-type: none"> <li>• Confusion between tetanus and rabies (linked to knowledge that you should get a tetanus jab if bitten by a dog).</li> <li>• Diphtheria not considered to be a threat in the UK, associated with travel. <i>"...a stomach infection, something really, really, nasty that you don't get anymore"</i> (mother, group of 2<sup>nd</sup> time mothers). <i>"a third world illness"</i> (1<sup>st</sup> time mothers in affluent area).</li> <li>• Polio was also not considered a current risk.</li> <li>• Hib was known least of all. Only two parents knew about it, one who was a nurse and another whose child had had it.</li> <li>• Although (or perhaps because) parents did not know about it, it was perceived as only a minor threat.</li> </ul> <p><u>Sex specificity of particular vaccines</u> The idea that Rubella was only important for girls and mumps for boys persisted for many parents, leading to questions about whether immunisation of both sexes was necessary</p>	
<p>(Lewendon &amp; Maconachie 2002)</p> <p><b>Title:</b> Why are children not being immunised? Barriers to immunisation uptake in South Devon</p>	<p><b>What was/were the research questions:</b> What local factors contribute to poor immunisation uptake? Comparison between Plymouth (urban) and South Devon as a whole (predominantly rural and more affluent).</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p>	<p><b>What population were the sample recruited from:</b> 'Principal immunisation giver' of each general practice in the South and West Devon Health Authority. Parents of children born between 1/7/96 and 30/9/96 recorded in the Child Health Surveillance dataset for the same area. Health visitors in areas where parent focus groups took</p>	<p><b>Brief description of method and process of analysis:</b> NR</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>'Principal immunisation givers'</u> In Plymouth written consent more likely to be obtained (p&lt;0.001) than in South Devon Opportunities for immunisation training and updates noted more in Plymouth than South Devon (p&lt;0.05)</p> <p><u>Health visitors</u> Health visitors identified the following as reason for refusal:</p>	<p><b>Limitations identified by author:</b></p> <p><b>Limitations identified by review team:</b> Study area was South Devon. Plymouth is in South Devon so presumably the researchers removed results from Plymouth from the overall South Devon results but this is not made clear.</p>

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<p><b>Year:</b> 2002</p> <p><b>Journal:</b> Health Education Journal</p> <p><b>Volume:</b> 61(3)</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score</b> B</p>	<p>Postal surveys, semi-structured interviews and focus group interviews. Carried out in South Devon, a rural, relatively affluent area.</p>	<p>place.</p> <p><b>How were they recruited:</b> Postal questionnaires sent to each principal immunisation giver and a sample of parents. How focus group parents and HVs were recruited NR.</p> <p><b>How many participants were recruited:</b> 102 general practices, focus groups (12 parents of fully immunised children, 4 parents of partly/un-immunised children, 3 HVs), parent survey (40 parents of fully immunised children, 40 parents of partly/un-immunised children)</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p> <p><b>Other details:</b></p>	<p>Adverse publicity about MMR; power/control over own child; problems with accessibility. <i>"A better uptake of immunisation occurs when the clinic is held on market day and there is a regular bus service into town".</i></p> <p><u>Parent focus groups</u> Health Education Authority leaflets, friends and health professionals were all important sources of information. Media less so, although all parents aware of controversy regarding MMR vaccine.</p> <p>Some quotes given as reasons for not immunising: <i>"His great uncle was disabled as a child with polio and that's why I don't want my child to be immunised."</i> <i>"I was diagnosed as having diabetes after my rubella injection at school so I am very concerned about the side effects of immunisation".</i> <i>"My other son has autism so my doctor told me not to let him have the MMR".</i> <i>"She was born premature so was not allowed to have the immunisations".</i></p> <p>There were concerns about how well a baby's immature immune system could cope with so many vaccines. Parents of unimmunised children felt that children were 'made stronger' by developing natural antibodies. Parents thought too much emphasis was put on benefits of immunisation by health professionals and not enough information about risks was given.</p> <p><u>Parent survey</u> Reasons for seeking reassurance or refusing immunisation as given by (1) parents of fully-immunised children, (2) parents of partly or unimmunised children: Child made stronger by natural illness/immunisation danger to immature immune system: MMR should be give</p>	<p>Poor level of detail about methodology, especially role of researcher and setting for interviews and focus groups.</p> <p>No measure of statistical significance of difference between parent groups.</p> <p>Results of parent survey categorised strangely.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> NR</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			separately: (1) 4%, (2) 68% Concerns about safety, risk of reactions/side effects: (1) 8%, (2) 26%. Childhood illnesses are not serious: (1) 0%, (2) 21%. No prior discussion with health professional before immunisation decision: (1) 32%, (2) 42%. Unhappy with information given: (1) 8%, (2) 21%. Inaccurate advice from health professionals (as judged by study authors): (1) 4%, (2) 21%. Adverse press coverage: (1) 4%, (2) 5%.	
(Loewenthal & Bradley 1996)  <b>Title:</b> Immunization uptake and doctors' perceptions of uptake in a minority group: implications for interventions  <b>Year:</b> 1996  <b>Journal:</b> Psychology, Health and Medicine  <b>Volume:</b> 1(2)  <b>Quality score:</b> (-)	<b>What was/were the research questions:</b> (1) What are the immunisation uptake rates among strictly-orthodox Jews compared to other patients? (2) How do uptake rates compare with doctors' estimates of uptake? (3) What are possible reasons for any low uptake detected?  <b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR  Multi-method: Analysis of secondary data (Health Authority Department of Child Health computer records); Consultation with local rabbis and communal leaders; Consultation with local GPs; focus group discussion with local health professionals (GPs, HVs, Practice Managers); semi-structured interviews with Jewish mothers. Research took place in inner-city north London area (City	<b>What population were the sample recruited from:</b> For secondary data analysis: 2 cohorts of children, those born in the last quarter of 1989 (n=95) and in the third quarter of 1990 (n=119). These were children from all backgrounds, not just orthodox-Jewish. For consultation with GPs and health professional focus groups, staff of GP surgeries in the area where secondary data was collected from. For semi-structured interviews with Jewish mothers, the population were orthodox Jewish mothers in the area with children under 5 years of age.  <b>How were they recruited:</b> NR  <b>How many participants were</b>	<b>Brief description of method and process of analysis:</b> Chi-squared to test whether there was a significant difference between uptake amongst orthodox-Jewish vs. other groups.  Related t-test to see whether there was a significant difference between uptake and GPs estimates of uptake.  <b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>Uptake</u> Significant differences (p<0.05) between orthodox-Jewish patients and others on all immunisations. Orthodox-Jewish patients being less likely to be immunised. Small but consistent tendency for orthodox-Jewish parents to take up diphtheria, tetanus and polio but not pertussis offered on the same occasion.  <u>GPs estimates of uptake</u> For the first cohort (on a 3, 6, 9 month schedule), GPs estimated that there was 63% uptake amongst orthodox-Jewish patients – significantly different (t=7.7, df=2, p=0.02) from the uptake recorded in central records of 89%.  For the second cohort (on a 2,3,4 month schedule) the	<b>Limitations identified by author:</b> small numbers of participating GPs made it difficult to statistically detect difference in estimating uptake except very large effects.  Central records may not be accurate. However, if inaccurate this should be across the board rather than just for orthodox-Jewish patients.  Small sample sizes.  <b>Limitations identified by review team:</b> Inaccuracies in central records not necessarily equivalent across all ethnic/religious groups.  No information on the 'other'

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<b>Applicability score</b> B	and Hackney area Health Authority), which is ethnically and religiously diverse, and economically disadvantaged.	<p><b>recruited:</b> 11 GPs in 3 practices, Health professionals for 2 group discussions (n=NR), 10 mothers.</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p> <p><b>Other details:</b> the number of infants of a orthodox-Jewish background in each cohort were identified using family name and confirmed using local community listings e.g. synagogue membership. In cohort one it was 59/95, cohort two it was 49/119.</p>	<p>GPs' estimate (80%) and central record (75%) were not statistically different. There was an over optimistic view of the uptake effect of the new schedule for orthodox-Jewish parents.</p> <p><u>Focus group discussions – reasons for low uptake given by health professionals</u> Over-estimation of risks of vaccines by mothers - close-knit community perpetuates tales of bad reactions. Logistic difficulties for mothers with large families and working mothers. Busy schedule of the religious calendar. Mothers had high level of demand for information, which health professionals did not have the time to meet.</p> <p><u>Interviews – reasons for low uptake given by mothers</u> Fear of bad reactions, often based on earlier childrens' experiences. Worries over albumen base of vaccines and not being advised to give children under 4 months eggs to eat. Logistic difficulties, large families, busy religious calendar. Unwell children should not be vaccinated. Unsympathetic treatment by GP practice staff, including feeling of being told off for missing injections leading to reluctance to go in again. Distrust about whether health professionals were more interested in uptake targets or babies' welfare.</p> <p><u>Other</u> Orthodox-Jewish mothers relatively cut off from the media, especially compared to influences from family, peers and Jewish community leaders/rabbis.</p>	<p>groups the orthodox-Jewish patients are being compared to. Given the area of London it seems possible that the comparison groups may also have large families and demanding religious/cultural calendars.</p> <p>Lack of information on how research participants were recruited.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed qualitative research</p> <p><b>Source of funding:</b> Stamford Hill Group Practice</p>
(Henderson, Macdonald, & Oates 2004)	<p><b>What was/were the research questions:</b> What are the factors contributing to</p>	n.b. paper reports on questionnaire surveys with four different groups	<p><b>Brief description of method and process of analysis:</b> NR</p>	<p><b>Limitations identified by author:</b> NR</p>

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<p><b>Title:</b> Low uptake of immunisation: contributing factors</p> <p><b>Year:</b> 2004</p> <p><b>Journal:</b> Community Practitioner</p> <p><b>Volume:</b> 77(3)</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> B</p>	<p>lower uptake of immunisation in the Scottish Highland area (lower in comparison to Scottish average).</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p>Postal questionnaires, carried out in 2002 in Highland Scotland.</p>	<p><b>What population were the sample recruited from:</b> (1) GP principals, retainers and associates in Highland region (n=282) (2) Health visitors and practice nurses in same region (3) Parents of incompletely immunised children in Highland region (n=241) (4) Parents of completely immunised children in same region.</p> <p><b>How were they recruited:</b> (1) Questionnaires sent to all. (2) Questionnaires sent to 160. (3) Questionnaires sent to all. (4) Questionnaires sent to 245.</p> <p><b>How many participants were recruited:</b> (1) 206 (73%) (2) 116 (73%) (3) 121 (54.3%) (4) 157 (64%)</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <p><u>(1) Doctors</u></p> <ul style="list-style-type: none"> <li>• Less confident about discussing MMR with parents than other vaccines.</li> <li>• 23% supported introduction of single vaccines instead of MMR.</li> <li>• 66% were in favour of stopping payments related to immunisation targets.</li> </ul> <p><u>(2) Health visitors(HVs) and practice nurses (PNs)</u></p> <ul style="list-style-type: none"> <li>• Like doctors, HVs and PNs were less confident about discussing MMR than other vaccines. <ul style="list-style-type: none"> <li>• <i>“MMR has had such media attention it is difficult to get information that is research based and easily understood to give to parents”.</i></li> <li>• <i>“Difficult to explain the reasons for a second MMR vaccination”</i></li> </ul> </li> <li>• 80% felt ‘very confident’ discussing DTP-Hib, Polio and Meningitis C, compared to 50% for MMR 1<sup>st</sup> dose and 45% for MMR 2<sup>nd</sup> dose. A small proportion (2%) felt ‘not at all confident’ discussing MMR (1<sup>st</sup> or 2<sup>nd</sup> dose)</li> <li>• 12.6% of HVs and 45% of PNs had had no formal education about immunisation.</li> <li>• 78.2% of PNs wanted further education about immunisation</li> <li>• 27.6% of PNs could identify all three absolute contraindications specific to MMR (allergy to neomycin or kanomycin, severe reaction to a previous dose of MMR and untreated malignant disease/immunosuppression.</li> <li>• ‘Several’ were concerned about the number of vaccines given over a short period of time.</li> <li>• 90% used health department circulars and the ‘Green book’ as an information source.</li> <li>• 28.7% of PNs thought that single vaccines instead of MMR should be available on the NHS.</li> </ul> <p><u>(3) and (4) Parents</u></p>	<p><b>Limitations identified by review team:</b> lack of details about analysis</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> Highland NHS Board</p>



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		<p><b>Other details:</b> 2 groups of parents balanced for number of children and single-parent families.</p>	<ul style="list-style-type: none"> <li>• Parents who hadn't completely immunised their children (3) were more likely to utilise information from the media (including internet) and friends about immunisation than parents whose children had completed immunisation (4) (no p values).</li> <li>• (4) more likely to discuss concerns with health professionals (GPs p=0.009; HVs p=0.003; PNs p=0.024)</li> <li>• 'Many' in both (4) and (3) found the media 'scaremongering' and the NHS 'biased'</li> <li>• (3) were more concerned about vaccine safety than (4) across all vaccines. <ul style="list-style-type: none"> <li>• % of parents expressing concern about vaccine safety (read from graph so approximate) <ul style="list-style-type: none"> <li>○ DTP: (3)=11%, (4)=4%</li> <li>○ Hib: (3)=9%, (4)=5%</li> <li>○ Meningitis C: (3)=12%, (4)=7%</li> <li>○ Polio: (3)=10%, (4)=3%</li> <li>○ MMR: (3)=72%, (4)=38%</li> </ul> </li> </ul> </li> <li>• 70% of (3) were in favour of single vaccines for MMR on the NHS. Only 20.4% of (4) were against single vaccines.</li> <li>• Almost 80% of (3) 'strongly agree' or 'agree' that this an association between MMR and autism and/or Crohn's disease.</li> <li>• Themes identified by researchers about characteristics of (3) parents: <ul style="list-style-type: none"> <li>• More likely to be in a higher socio-economic group</li> <li>• More likely to be first-time parents</li> <li>• More concerns about immunisation in general</li> <li>• Less likely to rely on information from health professionals and more likely to rely on information from internet and other sources.</li> </ul> </li> </ul>	
(Redsell et al. 2008)	<p><b>What was/were the research questions:</b> (1) What is the self-reported role of</p>	<p><b>What population were the sample recruited from:</b> Health visitors in two primary</p>	<p><b>Brief description of method and process of analysis:</b> Data grouped into themes and coded in NVIVO. Co-authors reviewed analysis process.</p>	<p><b>Limitations identified by author:</b> Likely that HVs who agreed</p>

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<p><b>Title:</b> Health visitors' role in communicating with parents about childhood immunisation</p> <p><b>Year:</b> forthcoming</p> <p><b>Journal:</b> tbc</p> <p><b>Volume:</b> tbc</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> B</p>	<p>HVs in relation to immunisation? (2) What are the underlying factors influencing HVs approaches to giving advice to parents? (3) What are HVs perceptions of the communication process with parents approaching primary immunisation and MMR?</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p>Face-to-face semi-structured interviews carried out by the principal author at a health centre convenient to the HV. Interviews were recorded and transcribed verbatim</p>	<p>care trusts in the UK</p> <p><b>How were they recruited:</b> Researcher went to 8 'locality meetings' and handed out information packs to HVs, which included reply slips for those interested in taking part.</p> <p><b>How many participants were recruited:</b> 22</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> researchers attempted to get HVs from a range of settings.</p> <p><b>Other details:</b> Participants' settings: Rural (n=4); inner city (n=10); city suburbs (n=6); affluent (n=6); deprived (n=11); mixed (n=5); high rates of minority ethnic groups (n=8).</p> <p>Way of working: Attached to a GP (n=10); geographical (n=7); linked to Sure Start (n=4); linked to homeless team (n=1).</p>	<p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>HVs role and identity</u></p> <ul style="list-style-type: none"> <li>• Saw themselves as providers of information and supporters of informed consent <ul style="list-style-type: none"> <li>◦ Some disagreed with attending appointment being the same as parental consent and thought written consent should be required.</li> </ul> </li> <li>• Worried about overloading parents with information on first visit: <i>"In the ideal world perhaps a vaccine would be a separate visit. They probably feel – sometimes I feel overloaded, so I'm sure sometimes they do".</i></li> <li>• Concerns about targets influencing GP practices <i>"they have a different incentive, which is financial at the end of the day. I'm sure ultimately it's about the client's health but in terms of them reaching their – they're under pressure to reach their targets".</i></li> </ul> <p><u>Communication strategies</u></p> <ul style="list-style-type: none"> <li>• Considered themselves communications experts.</li> <li>• Strategies for promoting immunisation programme including approaching parents with an expectation of consent, exploring and challenging myths, discussing herd immunity and raising awareness about disease threats and scares.</li> <li>• Described a trade-off between pressurising parents and maintaining a good relationship.</li> </ul> <p><u>Parents' right to choose</u></p> <ul style="list-style-type: none"> <li>• Parents in more affluent areas had higher information needs, parents in deprived areas less likely to question the immunisation programme. <i>"Ultimately it's their choice we can't force them to have it</i></li> </ul>	<p>to take part were more pro-immunisation than those who did not. Small sample size.</p> <p><b>Limitations identified by review team:</b> No information about where in the UK the research took place. No information about the HVs in terms of gender, age, ethnicity etc.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Need for interventions to help health professionals improve their communication skills so they can give immunisation information to parents more easily.</p> <p><b>Source of funding:</b> NR</p>

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			<p><i>but you just give them the sort of you know the information they need to make an informed choice and then you know if they decide not to come or they decide not to have it then we write it in the notes"</i></p> <ul style="list-style-type: none"> <li>Immunising children at home was met with mixed response. Some felt it was increasing access, some felt that parents who kept missing appointment might be doing so because they did not want to have their children immunised.</li> </ul> <p><u>MMR</u></p> <ul style="list-style-type: none"> <li>Parental confidence in MMR seen to be improving. But HVs felt the controversy had increased parental distrust in immunisation more generally.</li> </ul> <p><u>Communicating with migrant families</u></p> <ul style="list-style-type: none"> <li>Problems include families arriving with incomplete health records.</li> <li>Communication problems associated with a language barrier.</li> <li>Low literacy levels in some areas means translated leaflets may not help.</li> </ul>	
<p><b>Reid, 1898</b></p> <p><b>Title:</b> Vaccination viewpoints</p> <p><b>Year:</b> 2007</p> <p><b>Journal:</b> Health Visitor</p> <p><b>Volume:</b></p>	<p><b>What was/were the research questions:</b> To assess whether low immunisation uptake was due partly to professional indifference and lack of knowledge.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Medical and nursing disciplines were sent self-completion questionnaire,</p>	<p><b>What population were the sample recruited from:</b> Health visitors, school nurses and clinical medical officers in Liverpool, in October 1989</p> <p><b>How were they recruited:</b> Via distribution of anonymous postal questionnaires</p> <p><b>How many participants were recruited:</b> Response rate:</p>	<p><b>Brief description of method and process of analysis:</b> Data was coded and entered into a mainframe computer and analysed using SPSS</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>Importance of prevention: 'How would you asses the importance of preventing the following diseases in children nowadays?'</u> 90% or more in each group thought it very important to prevent dipheria, polio, tetanus, whooping cough, but less thought measles prevention to be very important (clinical medical officers 81%, health visitors 84%, school nurses</p>	<p><b>Limitations identified by author:</b> Not reported</p> <p><b>Limitations identified by review team:</b> Possible selection bias</p> <p>Interviews did not explore reasons for views expressed</p> <p><b>Evidence gaps and/or recommendations for</b></p>

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<p>25</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score</b> B</p>	<p>which had been piloted in a neighbouring health district. Questionnaires were distributed and collected by managers of each staff group in October 1984</p>	<p>94% Health visitors (105/112) 80% School nurses (48/60) 81% Clinical medical officers (21/26)</p> <p><b>Were there specific exclusion criteria:</b> Not reported</p> <p><b>Were there specific inclusion criteria:</b> Not reported</p> <p><b>Other details:</b></p>	<p>83%)</p> <p><u>Protection Score: 'On a scale of 10 points, how much do you estimate is the protection given by immunisation against the following diseases?'</u></p> <p>Measles and whooping cough vaccines were given lower scores than the others by each professional group. Scores for diphtheria, polio and tetanus vaccines were all in excess of 9.</p> <p>The mean score for pertussis vaccine was 7.5 for health visitors, 7.4 for school nurses and 7.9 for clinical medical officers.</p> <p>The mean measles scores were 7.2 for health visitors, 7.1 for school nurses and 8.1 for clinical medical officers.</p> <p><u>Finishing Primary Courses: 'In the contrast of your work, when you see a child aged 1.5 to 3.5 years who has not completed a full course of immunisation, which of the following do you recommend – finish/recommence/no action/not sure?'</u></p> <p>All clinical medical officers would have finished DT course, while 11.4% of health visitors and 14.6% of school nurses would have recommenced.</p> <p>One in four school nurses did not answer the question.</p> <p><u>Contra-indications: 'Professional were asked whether they regarded a variety of characteristics as contra-indications (permanent/ temporary/ none)</u></p> <p>There was disagreement over low-birth weight babies (less than 2500g) in relation to commencing courses of DT. 24% of clinical medical officers, 42% of health visitors and 44% of school nurses regarded it as a temporary contra-indication, with some stating they would wait until the child achieved a given weight, such as 5Kg</p> <p>Educational experience: 76% of clinical medical officers, 59% of health visitors and 54% of school nurses reported that they had received</p>	<p><b>future research:</b> High quality studies exploring broader populations and settings should be conducted</p> <p><b>Source of funding:</b> Not reported</p>

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			<p>specific education on immunisation since they started in their present capacity and 62% of clinical medical officers, 82% of health visitors and 85% school nurses, thought they would benefit from further education on the subject</p> <p>Perceived problems: Respondents were allowed to give up to 5 possible reasons for low uptake. Most health visitors and school nurses saw negative attitudes as the basis for low uptake. Parents and public were reported as apathetic and indifferent to preventative measures like immunisation. Ignorance of diseases and vaccines or more general deficiencies were also commonly mentioned.</p> <p>Health service problems were mentioned by 32 health visitors (overcrowded clinics, large caseloads). Social problems (such as material deprivation, one-parent families, working mothers) were mentioned by 29 health visitors. Some health visitors regarded the maternal grandmother as a source of negative influence on parents. Professional problems (such as professional ignorance/lack of motivation) were less commonly mentioned by health visitors than expected.</p> <p>Perceived solutions: Most professionals believed that there was potential for improving uptake. 41% of health professionals made suggestions for greater publicity, particularly better media use. Greater efforts to educate the public and professionals were also proposed. 19% health visitors favoured incentives to attend, such as linking immunisation acceptance to child benefit payments.</p>	
<p>(Rogers &amp; Pilgrim 1994)</p> <p><b>Authors:</b> Rogers and Pilgrim</p>	<p><b>What was/were the research questions:</b> (1) To establish the nature of parental dissent to immunisation and how primary health care workers react to it.</p>	<p><b>What population were the sample recruited from:</b> NR</p> <p><b>How were they recruited:</b> NR</p>	<p><b>Brief description of method and process of analysis:</b> Transcripts analysed thematically (no further details given).</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>Parents</u></p>	<p><b>Limitations identified by author:</b> sample represents a minority or 'deviant' group of people, although as parents grow in confidence more may</p>

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<p><b>Title:</b> Rational non-compliance with childhood immunisations: personal accounts of parents and primary health care professionals</p> <p><b>Year:</b> 1994</p> <p><b>Journal:</b> n/a <b>Volume:</b> n/a</p> <p>Report for the health education authority</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score</b> B</p>	<p>(2) To identify possible health education needs of professionals in dealing with particular groups of parents.</p> <p>(3) To identify the information needs of parents for making decisions about childhood immunisations.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p>Interviews that took place in mothers' homes or health professionals' offices. The interviews were transcribed. One researcher also attended two lectures on immunisation given immunisation dissenters.</p>	<p><b>How many participants were recruited:</b> 19 mothers and 10 health professionals</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p> <p><b>Other details:</b></p>	<ul style="list-style-type: none"> <li>• 2 types of non-compliers: those who decided not to immunise their children from the outset; those who initially complied with immunisation schedules but then changed their minds.</li> <li>• Previous compliance linked by parents to an 'automatic' acceptance of the official guidance on immunisation.</li> <li>• Researchers argue that interest in homeopathy is often a result of non-compliance rather than the other way round.</li> <li>• A belief that natural immunity through contracting the disease is safer and more effective than immunisation.</li> <li>• Immunisation seen as part of a general trend to relying on doctors and drugs rather than a healthy lifestyle.</li> <li>• Contraindication recognised officially by health professionals seen as too narrow – they should include asthma, eczema, allergies .etc</li> <li>• Non-compliance tends to run in families.</li> </ul> <p><u>Interactions with health professionals</u></p> <ul style="list-style-type: none"> <li>• Parents felt that health professionals denied the risks and were more interested in rhetoric than giving honest advice and opinions.</li> <li>• Disagreements with health professionals over immunisation can affect future relationship around child's health more generally.</li> <li>• Parents felt there was a presumption that they would agree to immunisation without discussion or time for thought.</li> </ul> <p><u>Health professionals</u></p> <ul style="list-style-type: none"> <li>• Can be categorised in their approach to talking to parents about immunisation as authoritarian, paternalistic, liberal paternalistic, or libertarian.</li> <li>• Authoritarian focuses on herd immunity and that</li> </ul>	<p>become immunisation dissenters.</p> <p><b>Limitations identified by review team:</b> Lack of detail about how the interviewees were recruited. How is the article shaped by the political views of the authors?</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed qualitative studies to be conducted</p> <p><b>Source of funding:</b> NR</p>

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			<p>their knowledge of disease is greater than parents' knowledge.</p> <ul style="list-style-type: none"> <li>• Paternalistic refers to health professionals with the belief that immunisation is best for the common good but at the same time they want to maintain a good relationship with their patients.</li> <li>• Liberal paternalistic is similar to paternalistic but more open to ideas about complementary medicine such as homeopathy.</li> <li>• Libertarian position (only 1 participant in this study fitted this category) refers to health professionals who doubt the legitimacy of mass childhood immunisation and feel that immunisation promotion puts unfair pressure on parents, and that immunisation is a 'smokescreen' for policy-makers avoidance of the relation between infectious diseases and poor socio-economic conditions.</li> </ul>	
<p>(Saffin 1992)</p> <p><b>Title:</b> School nurses immunising without a doctor present</p> <p><b>Year:</b> 1992</p> <p><b>Journal:</b> Health Visitor</p> <p><b>Volume:</b> 65 (11)</p> <p><b>Quality score:</b> (-)</p>	<p><b>What was/were the research questions:</b> An evaluation of immunisation giving practise in schools has changed in terms of how gives the immunisation. Establish the impact of practice on the school nurses' workload. Explore nurses' views on immunising without a doctor present. Assess nurse' training needs.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> - <b>What method (s)</b></p>	<p><b>What population were the sample recruited from:</b> School nurses based in the Oxfordshire Health Authority (n=28).</p> <p><b>How were they recruited:</b> survey sent through post</p> <p><b>How many participants were recruited:</b> 24 out of 28.</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><b>Brief description of method and process of analysis:</b> NR</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>Training</u></p> <ul style="list-style-type: none"> <li>• In 1989/90 all school nurses had been offered training in immunising without a doctor present. 22 of 24 had attended and all had found it 'very' or 'quite' relevant.</li> <li>• All felt that updating was important either annually or biennially. Nine of 24 wanted that updating to be for School nurses only. Six wanted to include health visitors and five wanted to include district nurses and practice nurses. <ul style="list-style-type: none"> <li>○ Many nurses felt isolated and training and updating was seen as a good opportunity to network.</li> </ul> </li> </ul>	<p><b>Limitations identified by author:</b></p> <p><b>Limitations identified by review team:</b> Lack of information about methodology.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> on-going evaluation of nurse-only immunisation. Whether extra clerical help would be adequate to address extra workload – what help already exists, how useful it is, and what</p>

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<p><b>Applicability score</b> B</p>	<ul style="list-style-type: none"> <li>- <b>By whom</b></li> <li>- <b>What setting(s)</b></li> <li>- <b>When</b></li> </ul> <p>Survey sent to all school health nurses in Oxfordshire Health Authority. The nurses were asked to reflect on practice in 1989/90 and 1990/91. The research took place in the summer term 1991.</p>	<p><b>Other details:</b></p>	<p><u>Immunising without a doctor present</u> School nurses were asked about immunising without a doctor present. Comments about advantages included: an increased sense of job satisfaction and status; perception of providing a better and more flexible service; easier to set dates for immunisation; follow-up of absentees easier. <i>“less rushed atmosphere”</i> <i>“few children feeling sick etc because there’s more time”</i> <i>“greater control over session”</i></p> <p>10 of 24 could think of no disadvantages of their not being a doctor present but those who mentioned a disadvantage mainly referred to workload – <i>“may be a need for extra pair of hands – clerical would do”</i> <i>“having to attend more sessions to help other nurses”</i></p> <p>There was a 23% increase in the number of immunisation sessions attended by school health nurses since they started immunisation without a doctor.</p> <p>None reported facing medical problems or contraindication questions that they were unable to deal with.</p>	<p>further help is needed. Similar research in other geographical areas.</p> <p><b>Source of funding:</b> NR</p>
<p>(Samad et al. 2006)</p> <p><b>Authors:</b> Samad, Butler, Peckham, Bedford and the Millennium Cohort Study Child Health Group</p> <p><b>Title:</b> Incomplete</p>	<p><b>What was/were the research questions:</b> Mothers’ reasons for incomplete or no uptake of immunisation. Different reasons given by mothers with partially immunised infants vs. those with unimmunised infants.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p>Data comes from the Millennium Cohort Study (MCS), a nationally</p>	<p><b>What population were the sample recruited from:</b> MCS includes infants born between September 2000 and January 2002. This paper is about their mothers who were interviewed when their infant was about 9 months old.</p> <p><b>How were they recruited:</b> NR</p> <p><b>How many participants were recruited:</b> mothers of 18,488</p>	<p><b>Brief description of method and process of analysis:</b> Percentages calculated using STATA 8.2 software.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> n.b. a p-value of &lt;0.05 considered by researchers as significant.</p> <p>95.6% of infants reported as fully immunised. 3.3% partially immunised. 1.1% unimmunised. Immunisation in England and Wales significantly lower than in Scotland and Northern Ireland. Low uptake particularly in London where 93.9% fully</p>	<p><b>Limitations identified by author:</b> further in-depth qualitative research could elaborate on reasons given further but would not be possible to have such a large sample size.</p> <p>Possibility of false reporting by mothers cannot be ruled out.</p> <p><b>Limitations identified by</b></p>



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<p>immunisation uptake in infancy: maternal reasons</p> <p><b>Year:</b> 2006</p> <p><b>Journal:</b> Vaccine</p> <p><b>Volume:</b> 24</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score</b> A</p>	<p>representative longitudinal cohort study. Mothers interviewed in their homes by trained researchers about their only or first-born baby. Sample stratified by country (England, Wales, Scotland and Northern Ireland) and electoral ward to type to represent children from ethnic minority groups, disadvantaged backgrounds and 'Celtic' countries. Mothers were asked whether infants' immunisation was up-to-date and if not, or the infant had received no vaccines at all, they were asked to give reasons, which were recorded.</p>	<p>infants (response rate 72%)</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p> <p><b>Other details:</b></p>	<p>immunised.</p> <p>The researchers investigated the difference/similarities between mothers with partially immunised children (group 1) and those with unimmunised children (group 2).</p> <p><u>Reasons common to both groups</u> Child unwell at immunisation appointment time (group 1, 31.4%; group 2, 17.2%) Family history of epilepsy as reason for not wanting pertussis vaccine.</p> <p><i>"she has not had whooping cough vaccine...husband has epilepsy and we understand that there could be a connection so we are still thinking it out... we really do not know what to do"</i> mother of partially immunised child</p> <p><u>Reasons more common in group 1</u> Infant had an appointment in the near future, 14.1% Inability to keep appointment, 5.4% Administrative difficulties, 4.7%.</p> <p><i>"transport problems due to having two small children...the surgery is quite far away and they only do the surgery on Wednesdays and I can't get from the nursery to the surgery easily"</i></p> <p><i>"...because I work on the only day available at the clinic for immunisations"</i></p> <p><i>"We've moved house and not got up-to-date"</i></p> <p><i>"had 2 doses, new health visitor hasn't managed to make appointment yet"</i></p> <p><u>Reasons more common in group 2</u> Concerns about vaccine safety, 11.4%</p>	<p><b>review team:</b></p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> Economic and Social Research Council, 'consortium of government funders', Mercers' Company, R&amp;D funding from NHS executive.</p>

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			<p>Preference for homeopathy, 6.9% Parental choice, 17.4% Medical problems of family members following immunisation, 7%.</p> <p><i>“because a family member took epileptic fits after whooping cough...”</i></p> <p><i>“Personally I don’t believe in them... I just don’t agree with them... my other kids didn’t have them, nor did I and we have no problems”</i></p> <p><i>“I think they actually do more harm than good and childhood diseases are cleansing for them”</i></p> <p><i>“both myself and my husband are very allergic and – may be the same so we are going to miss them altogether particularly the MMR as I am a biochemist... I understand the risks involved and have decided against them”</i></p> <p><i>“It can weaken their immune system so we have decided to wait until he is two and then we will reassess and see if vaccine is necessary”</i></p> <p><i>“don’t agree with immunisation programme and treats homeopathically”.</i></p>	
<p><b>Number:</b> (Simpson, Lenton, &amp; Randall 1995)</p> <p><b>Title:</b> Parental refusal to have children immunised: extent and</p>	<p><b>What was/were the research questions:</b> To look at the group of children who receive no immunisations and why their parents make that choice.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p>	<p><b>What population were the sample recruited from:</b> Children in area covered by Bath District Health Authority whose parents had given negative consent to immunisation between 1987 and 1993 (n=106).</p> <p><b>How were they recruited:</b></p>	<p><b>Brief description of method and process of analysis:</b> NR</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <p><u>Reasons for negative consent</u> &gt;1/5 stated homeopathy 16% (n=16) religious reasons Others stated individual or medical reasons</p>	<p><b>Limitations identified by author:</b> NR</p> <p><b>Limitations identified by review team:</b> Lack of details on methodology and analysis.</p> <p><b>Evidence gaps and/or</b></p>

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<p>reasons</p> <p><b>Year:</b> 1995</p> <p><b>Journal:</b> British Medical Journal</p> <p><b>Volume:</b> 310</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score</b> B</p>	<p>Postal questionnaire to be filled in by parents. No other details.</p>	<p>List of those in population obtained and questionnaire and explanatory letter sent by post. 2<sup>nd</sup> questionnaire sent to non-respondents. Health visitor attempted contact too.</p> <p><b>How many participants were recruited:</b> n=87 (82% of identified population)</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p> <p><b>Other details:</b></p>	<p><u>Example of responses (details of respondents NR)</u></p> <p><i>"I don't consider the risk of these diseases to be greater than the risk of vaccination. I use homoeopathy to protect my child and am confident that this is the best way of doing so."</i></p> <p><i>"My child is protected but not by immunisation. We are Christian Scientists."</i></p> <p><i>"As a Christian I trust in God for health and healing (as promised in the Bible) both for myself and for my children. They are protected by God's promise not by man's vaccination."</i></p> <p><i>"We do not believe that healthy children living in healthy conditions need protecting by immunisation."</i></p> <p><i>"...had very severe eczema as a baby which until recently was a contraindication for immunisation. Although it has now been removed from the list of contraindications, no discussion was available on this at the time we consulted our GP."</i></p> <p><i>"...aunt had a reaction against whooping cough vaccine and required special schooling."</i></p>	<p><b>recommendations for future research:</b> Well designed qualitative studies</p> <p><b>Source of funding:</b> NR</p>
<p>(Smailbegovic, Laing, &amp; Bedford 2003)</p> <p><b>Title:</b> Why do parents decide against immunization? The effect of health beliefs</p>	<p><b>What was/were the research questions:</b> What are the knowledge, attitudes and concerns of parents whose children have not completed the immunisation schedule to immunisation and vaccine-preventable infections?</p> <p><b>What theoretical approach (e.g.</b></p>	<p><b>What population were the sample recruited from:</b> Parents of children born between 1 January 1999 and 15 February 1999 living in Hackney who have defaulted on one or more primary immunisation (n=149).</p> <p><b>How were they recruited:</b></p>	<p><b>Brief description of method and process of analysis:</b> NR</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <ul style="list-style-type: none"> <li>• MMR, meningitis C and pertussis most commonly omitted (57%, 49% and 18% respectively).</li> <li>• Main concern was vaccine safety. Other concerns included time constraints and lack of information.</li> <li>• Little difference between ethnic groups.</li> </ul>	<p><b>Limitations identified by author:</b> mothers who volunteered for follow-up interviews not representative of the sample as a whole. Small sample. Non-response bias.</p> <p><b>Limitations identified by</b></p>

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<p>and health professionals</p> <p><b>Year:</b> 2003</p> <p><b>Journal:</b> Child: Care, Health and Development</p> <p><b>Volume:</b> 29 (4)</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> B</p>	<p><b>Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p>Questionnaire (open and closed questions, piloted with 7 respondents) and sample of follow-up interviews. Questionnaire sent by post with explanatory letter, after 3 weeks it was resent to non-respondents. Research took place in the London Borough of Hackney, an inner-city area usually in the bottom decile for immunisation uptake nationally. Local population 'disadvantaged' and culturally/ethnically diverse. Universal BCG is part of the recommended course of immunisation.</p>	<p>Population identified using the Regional Interactive Child Health System database and confirmed against HV and parental records via direct contact or telephone. Questionnaire sent to parents' homes. The response rate was 69%.</p> <p><b>How many participants were recruited:</b> 68 for questionnaire, 10 for follow-up interviews (all interviewees were mothers).</p> <p><b>Were there specific exclusion criteria:</b> Those identified as immunised by parents and/or HVs, those whose letters were returned 'person unknown at this address'.</p> <p><b>Were there specific inclusion criteria:</b> NR</p> <p><b>Other details:</b> <u>Respondent characteristics</u> 88% of respondents were mothers. 48% had three or more children (range 1-10 children). 31% lone parents. 45% white. 24% African or black</p>	<ul style="list-style-type: none"> <li>• Health professionals were the most common source of information but most parents (66%) used three or more sources of information. Family and friends were also important sources.</li> <li>• 48% thought advice from health professionals was the most useful.</li> <li>• 54% rated advice from health professionals as satisfactory.</li> <li>• 19 parents (28%) were dissatisfied with information from health professionals. They felt it was influenced by government policy and therefore information about vaccine safety was withheld.</li> <li>• Most associated immunisation with protection, disease prevention and development of antibodies.</li> <li>• 18% admitted that they did not know how immunisation worked. <ul style="list-style-type: none"> <li>○ <i>"not really sure but know that this is a good and important thing to do".</i></li> </ul> </li> <li>• 34% perceived some vaccines as more risky than the disease they protected against. <ul style="list-style-type: none"> <li>○ <i>"For my children all vaccines are more risky than the disease itself because they are really not exposed."</i></li> <li>○ <i>"From what I understand from the media, MMR is more risky than actual diseases."</i></li> </ul> </li> <li>• Concern about the long-term effects of MMR included fears of autism.</li> <li>• Meningitis perceived as the most serious disease.</li> <li>• Pertussis, diphtheria and measles perceived as serious or very serious.</li> <li>• Rubella seen as a mild disease except during pregnancy.</li> <li>• Complementary medicine of some form was used by 29% of parents but none intended it as an alternative to vaccination.</li> <li>• Follow-up interviews suggested that mothers were most concerned about MMR but not immunisation in</li> </ul>	<p><b>review team:</b></p> <p><b>Evidence gaps and/or recommendations for future research:</b> Investigate nature of 'support' given by health professionals to parents who want single vaccines for instead of combined MMR. Investigate information given by health professionals about the safety of combined MMR vaccine.</p> <p><b>Source of funding:</b> NR</p>

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		Caribbean origin. 48% had completed compulsory education.	<p>general.</p> <ul style="list-style-type: none"> <li>Government policy on combined MMR vaccine thought to be for financial reasons.</li> <li>Interviewed mothers would like the opportunity to discuss immunisation in more detail with health professionals.</li> </ul>	
<p>(Sporton &amp; Francis 2001)</p> <p><b>Title:</b> Choosing not to immunize: are parents making informed decisions</p> <p><b>Year:</b> 2001</p> <p><b>Journal:</b> Family practice</p> <p><b>Volume:</b> 18</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score</b> B</p>	<p><b>What was/were the research questions:</b> to explore the decision making process of parents who have chosen not to have their children immunised</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p>Qualitative study using semi-structured interviews (30-90 minutes) with parents either in their own homes or places of work.</p>	<p><b>What population were the sample recruited from:</b> Parents of non-immunised children in an inner city area (exact location not disclosed)</p> <p><b>How were they recruited:</b> District immunisation coordinator and health visitors within the area referred parents who had not immunised their children to the researchers. Researchers selected participants with using purposive maximum variation sampling.</p> <p><b>How many participants were recruited:</b> 14 sets of parents (1 pulled out prior to interview). Sets of parents recruited but interviews took place with 12 mothers and 1 father.</p> <p><b>Were there specific exclusion criteria:</b> parents chosen to meet the inclusion criteria (below) those who duplicated the characteristics</p>	<p><b>Brief description of method and process of analysis:</b> Data analysed using consistent and systematic review. Transcripts were analysed using a coding frame. Analysis assisted by QSR-NUD*IST software.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <p>1. <u>Parents perceptions of childhood diseases</u> Parents categorised diseases into 'serious' (diphtheria, tetanus and polio) and 'mild' (mumps, measles and rubella). Perceived risk of catching serious illness considered small whereas risk of catching 'mild' diseases was described as greater. Fear of side effects. Perception that health information/leaflets exaggerated the efficacy of vaccines. Perception that health professionals were unwilling to acknowledge side effect risks and perception that GP payments for immunisation targets were a preventing them providing balanced information.</p> <p>2. <u>reasons for choosing not to vaccinate</u> Multiple reasons (including moral, alternative methods of protection, practicalities and personal experience), although all mentioned fear of side effects.</p> <p>Some parents felt that there had not been enough research on side effects: <i>"My main objection is that there's been no proper research done, there's been a few tests on animals which I don't</i></p>	<p><b>Limitations identified by author:</b> NR</p> <p><b>Limitations identified by review team:</b> small sample size. Use of purposive sampling for maximum variation on variety of characteristics assumes each parent only has one characteristic. Parents in sample had children in a wide range of ages (11 months to 20 years). In the results section not enough is said about how prevalent particular viewpoints were in the sample.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed qualitative studies to be conducted</p> <p><b>Source of funding:</b> NR</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
		<p>of another set of parents already selected were excluded.</p> <p><b>Were there specific inclusion criteria:</b> In order to gain maximum variation the following characteristics were used purposively to select sample: 'informed parent'; 'unsure decision parent'; 'firm decision parent'; single parent; religious reasons for not immunising; one child; several children; parent a health care professional; low socio-economic group; high socio-economic group; father main carer; previous child had side effects; believer in alternative medicine.</p> <p><b>Other details:</b> one set of parents withdrew prior to interview Inner city setting in area with a high level of deprivation</p>	<p><i>believe are relevant to the effect on humans. I just believe it's a very hit and miss affair, nobody's actually done any research on the long-term effects of vaccinations."</i></p> <p>Some parents discussed alternative protection including homeopathy, diet, a belief in God and control over infection exposure.</p> <p><i>"I suppose because I was at home with him, for the first, his first year of life, I knew that he wouldn't be exposed to anything, he wasn't going to a nursery or a child minder, ... I knew that to some extent I had some degree of control over the people he was exposed to and the germs he was exposed to".</i></p> <p>One parent reported a negative experience to immunisation in her family had prevented her being immunised and she was fine (so had decided not to immunise her own child).</p> <p><u>Decision-making</u> Several parents considered that most parents made the decision to immunise their children 'as a matter of course' relying on the information of health professionals rather than thinking about the pros and cons.</p> <p>The researchers outline a model of decision-making comprising a number of stages: a trigger, a questioning stage, a thinking stage and information hunt, the dilemma, the decision and reflection. All stages are influence by other factors including: personal views, beliefs, emotions, healthcare professionals, personal experience, other parents, friends, complementary practitioners, literature and media.</p> <p><i>"I thought it was compulsory until people told me it wasn't. I didn't actually realise I had a choice, I became extremely anxious because I then realised that it was yet another decision."</i></p>	

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			<p><i>“Polio was obviously something, if you know you prevent a real paralysis which is a lifelong problem, it’s not something that is easy to get rid of, but it’s so unlikely to happen and the side effects are so risky I mean that I think it’s just not worth doing I don’t think.”</i></p> <p><i>So it’s not as if I’m dead against it I just don’t feel I want to be the one to say yes OK do it and then if they do suffer any side effects, I mean I know there’s very minor side effects but if they do suffer serious side effects, I don’t want... to be the one to give the permission for that”.</i></p> <p><i>“I think I would feel worse if anything happened to him as a result of being vaccinated, than if anything happened to him as a result of catching a childhood illness, I’d feel a lot worse if I’d had him done and he was brain damaged or he became autistic... because a childhood illness is a natural thing it’s something which has always been and always will be, which you know we are manipulating our environment all the time with our medical interventions.”</i></p>	
<p>(Tickner, Leman, &amp; Woodcock 2007)</p> <p><b>Title:</b> ‘It’s just the normal thing to do’: exploring parental decision-making about the ‘five-in-one’ vaccine</p> <p><b>Year:</b> 2007</p>	<p><b>What was/were the research questions:</b> What are parental attitudes to the five-in-one (DTaP/IPV/Hib) vaccine in the context of post MMR controversy? How parents make decisions about vaccinating young babies?</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> modified grounded theory approach</p> <p>Face-to-face flexible semi-structured interviews. Questions guided by</p>	<p><b>What population were the sample recruited from:</b> parents of babies between 4 and 13 weeks old, south England.</p> <p><b>How were they recruited:</b> Via 4 general practices. The Health Visitor or practice nurse asked parents to participate when their child was 1 month old.</p> <p><b>How many participants were recruited:</b> 22 (21 mothers, 1 father).</p>	<p><b>Brief description of method and process of analysis:</b> Interviews recorded and transcribed verbatim. Modified grounded theory used for analysis (modified as researchers already familiar with literature). Themes coded. Coding becoming more specific as recurrent themes emerged.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <p><u>Parental knowledge and perceived importance of vaccination</u></p> <ul style="list-style-type: none"> <li>• Only four parents could list all the diseases the five-in-one vaccine protected against.</li> <li>• A lot of awareness of meningitis and how to detect symptoms.</li> </ul>	<p><b>Limitations identified by author:</b> Possibility of selection bias during recruitment.</p> <p>Wide range of social classes but all white from southern England.</p> <p>Interviews asked about intentions to vaccinate rather than actions taken.</p> <p><b>Limitations identified by review team:</b></p>

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<p><b>Journal:</b> Vaccine</p> <p><b>Volume:</b> 25</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score</b> B</p>	<p>parents' responses and probing questions used. The researchers carried out the interviews themselves in the interviewees' homes between November 2005 and October 2006.</p>	<p><b>Were there specific exclusion criteria:</b> parents of children born preterm or with significant health problem. Parents with mental health problems or post-natal depression. Parents already involved in other research.</p> <p><b>Were there specific inclusion criteria:</b> purposive sampling used to get participants from a range of socioeconomic backgrounds and a range of viewpoints about immunisation.</p> <p><b>Other details:</b> All parents white British.</p> <p>Qualifications: Educated up to 16 years (3), National Vocational qualification/diploma (8), degree or other (11). Marital status: married (11), remarried (2), divorced (1), single (8)</p> <p>14 of the 22 parents were first time parents.</p>	<ul style="list-style-type: none"> <li>• Uncertainty about how likely a child was to get the diseases.</li> <li>• 13 parents referred to the importance of protecting their child for the good of other children. <ul style="list-style-type: none"> <li>◦ <i>“protecting the child, but protecting all the other children as well. Yeah I think that’s a good benefit to have”</i> (female, 38)</li> </ul> </li> </ul> <p><u>Perceived risks and benefits of combining antigens</u></p> <ul style="list-style-type: none"> <li>• 17 parents saw 'less trauma' as a major benefit of the combined vaccine. <ul style="list-style-type: none"> <li>◦ <i>“Well it’s obviously beneficial for the child in that they only have to go through one jab as it were, so it would be less painful, more humane really”</i> (female 25)</li> </ul> </li> <li>• 9 parents expressed concern that the combined vaccine might put undue stress on the baby’s immature immune system.</li> <li>• 8 would prefer single antigen vaccines. However, only 4 would be happy to pay for them. 5 acknowledged that separate vaccines were not available and for some the compliance with vaccination was more about lack of choice than acceptance of the five-in-one. <ul style="list-style-type: none"> <li>◦ <i>“I think single injections are always preferable, but if you can’t actually get them then you’ve got to go down the route of having the combined ones”</i> (female, 35).</li> </ul> </li> <li>• 8 parents believed the five-in-one was introduced because it was most cost effective.</li> </ul> <p><u>Understanding of how immunisation works</u></p> <ul style="list-style-type: none"> <li>• Most (n=19) parents believed that immunisation meant injecting a 'little bit of the disease'.</li> <li>• Parents based their understanding on 'common sense' rather than education or government health information.</li> </ul>	<p><b>Evidence gaps and/or recommendations for future research:</b> Follow-up interviews</p> <p>Interviewees said that their partners were involved in the decision-making process but only one interviewee was a father – further research could be done about the role of fathers.</p> <p>Immunisation decisions by parents of babies with medical problems or born preterm.</p> <p><b>Source of funding:</b> Travel expenses funded by the Central Research Fund, University of London.</p>



Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			<p><u>Knowledge and Trust in vaccine safety</u></p> <ul style="list-style-type: none"> <li>• 16 believed that the five-in-one vaccine was safe.</li> <li>• 13 referred to the lack of negative publicity (in comparison to MMR).</li> <li>• Only two younger mothers (aged 18 and 21) were unaware of the MMR controversy.</li> <li>• 15 would follow the recommendations of a health professional. 6 distrusted professional advice.</li> <li>• 10 parents would rely on the trusted internet sites (e.g. NHS direct and government websites for information about immunisation. There was a lack of awareness about the NHS immunisation site.</li> </ul> <p><u>Perceived vulnerability, parental guilt and feelings of responsibility</u></p> <ul style="list-style-type: none"> <li>• Guilt about process of injection i.e. hurting the baby with a needle. <ul style="list-style-type: none"> <li>○ <i>“you’re talking a well baby in, filling them full of drugs and I think that’s a psychological barrier almost that you think, you know, I’m making this choice, I’m taking this vulnerable child and this is what I’m going to do”</i> (female 35).</li> </ul> </li> <li>• Although some parents who also had older children noted that it was easier with babies than preschoolers, as they did not have an understanding of what was happening. However, others were concerned by the fact that a baby cannot communicate that they are feeling unwell making it difficult to monitor side effects.</li> <li>• First time parents were more likely to be nervous of taking their baby and may need a friend or family member to go with them. <ul style="list-style-type: none"> <li>○ The role of the maternal grandmother emerged as an important influencer.</li> </ul> </li> </ul> <p><u>Making a decision or following recommendations</u></p>	

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			<ul style="list-style-type: none"> <li>Despite concerns most parents intended to give their child the five-in-one. It was seen as 'the normal thing to do'.</li> </ul> <u>Practicalities</u> Most parents were in favour of flexible appointment times but 10 mentioned that reminders would be helpful.	
<p>(Yarwood et al. 2005)</p> <p><b>Title:</b> Tracking mothers attitudes to childhood immunisation 1991-2001</p> <p><b>Year:</b> 2005</p> <p><b>Journal:</b> Vaccine</p> <p><b>Volume:</b> 23</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> A</p>	<p>n.b. This paper is based on findings from 20 surveys that took place over 10 years.</p> <p><b>What was/were the research questions:</b>  (1) mothers' knowledge of immunisation  (2) mothers' attitudes towards immunisation  (3) mothers' experience of immunisation  (4) mothers' recall/interpretation of NHS advertising and immunisation information.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p>Surveys every 6 months. Surveys contained a mix of open and closed questions and were carried out face-to-face at respondents' homes. 20 surveys took place between Oct. 1991 and Mar. 2001.</p>	<p><b>What population were the sample recruited from:</b> Mothers with children under 3 years, UK</p> <p><b>How were they recruited:</b> Random location sampling was used to select 132 enumeration districts. Consecutive households were approached by researchers until quota achieved.</p> <p><b>How many participants were recruited:</b> 15,000</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p> <p><b>Other details:</b> Sample was weighted in terms of age, social grade and location on the basis of national statistics. Sample</p>	<p><b>Brief description of method and process of analysis:</b> NR but results presented as graphs over time (data as percentages).</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Percentages given below are approximate (taken from line graphs without grid lines)</p> <p><u>Awareness of available immunisations</u> MMR awareness increased (from 60%-82%) Polio, DTP awareness quite stable (Polio 70%; DTP 25%) Hib, Pertussis awareness declined (Hib from 50%-37%; pertussis from 66%-25%)</p> <p><u>Perceived seriousness of vaccine preventable diseases</u> Given as percentage of mothers rating disease as 'very serious' on Likert scale from 'not very serious' to 'very serious'. Meningitis C: stable/slight increase at c.93%. Polio: decline from 82% to 67%. Hib: very low in 1992 at 18%, peak in 93/94 to 78%, steady decline to 40% in 2001. Pertussis: fairly steady decline, 70-40%. Diphtheria: slight decline, 60-50% Tetanus: fairly stable at around 40% Rubella: decline from 1991-1994 (30-20%), rise to 35% in 1994, fairly stable since then. Measles: 1991-1994, around 28%. Steep rise to 55% in second half of 1994, fell back to around 20% by 1996, then</p>	<p><b>Limitations identified by author:</b> NR</p> <p><b>Limitations identified by review team:</b> Nature of study (large longitudinal survey) means that it is very good for giving an overall picture but cannot tell us much about individual awareness/decision-making.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> Health Education Authority (partly).</p>

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		<p>was nationally representative.</p> <p>Context, time period 1991-2001: early years were period of increasing uptake. Later years stable, except MMR, which has gradually fallen from 1995.</p>	<p>fairly stable with slight rise to 30% by 2001. Mumps: fairly stable, around 20%.</p> <p><u>Safety of immunisations</u> Overall, respondents thought immunisations were safe. Until 1997 mothers were most worried about Pertussis/whooping cough vaccine, this was displaced by MMR.</p> <p><u>Intention to vaccinate future children</u> Fairly stable over time, just over 90% agreeing with statement "if I had another child, I would have them immunised against all childhood diseases", around 75% strongly agreed.</p> <p><u>Interactions with health professionals</u> &gt;2/3 of mothers discussed immunisation with a health professional beforehand. &lt;1/4 were only told about benefits. &lt;1/10 were only told about side effects.</p> <p>Role of husband/partner in decision-making became increasingly important over the study period, becoming more important than the mother's mother by 1999.</p> <p><u>The immunisation visit</u> 31% dissatisfied with some aspect of most recent visit but only 9% said they were 'dissatisfied overall'. Findings fairly stable over study period.</p> <p><u>Advertising and publicity</u> A large proportion (75-95%, fluctuating over study period) were aware of some advertising, most frequently mentioned were TV adverts and leaflets. TV adverts had higher recognition/recall than leaflets.</p>	

Evidence table for studies reporting knowledge, attitudes, values and beliefs of MMR

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<p><b>(Casiday 2006)</b></p> <p><b>Title:</b> Uncertainty, decision making and trust: lessons from the MMR controversy</p> <p><b>Year:</b> 2006</p> <p><b>Journal:</b> Community Practitioner</p> <p><b>Volume:</b> 79 (11)</p> <p><b>(Casiday 2007)</b></p> <p><b>Title:</b></p>	<p><b>What was/were the research questions:</b> Examine strategies that parents adopt for dealing with the decision of whether or not to immunise their child with the MMR vaccine, and the implications of those strategies for health professional providing information and advice to parents.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Research sites were university cities, with relatively affluent and well educated populations, although both have pockets of socioeconomic deprivation.</p> <p>Three focus groups (totalling 16 parents) and 71 individual interviews with parents of young children were carried out between November 2002 and October 2004. The focus groups</p>	<p><b>What population were the sample recruited from:</b> Parents of young children in and around Cambridge and Durham, UK, participated in between November 2002 and October 2004</p> <p>Participants were purposively selected to include a broad range of educational qualifications, socioeconomic backgrounds and immunisation decisions</p> <p><b>How were they recruited:</b> Parents were recruited at toddler groups, community centres, and nurseries through personal visits and flyers, which asked for 'parents of young children who would be willing to discuss their views and experiences about the MMR vaccine.' Snowball sampling was also used to access additional parents</p>	<p><b>Brief description of method and process of analysis:</b> Transcripts were carefully read several times to build and interpretive framework for qualitative analysis. The analytical approach involved both answering questions of a priori research interest and searching for emergent themes.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Of the 87 parents who participated, 56 had vaccinated their children with the MMR at the time of interview, 16 had (or were planning to have) separate vaccines, 10 did not vaccinate their children against measles, mumps or rubella, and 5 were still undecided.</p> <p>Many parents sought to reduce the complexity of the decision to immunise with the MMR vaccine through trust in other experts of groups. Often parents placed this trust in health professionals and medical advice, or in anti-vaccine groups or private clinics administering separate vaccines. Some parents rejected all immunisations, not just the MMR. <i>"My partner and I decided together. We brought it up with the nurse before we had it... I think just from hearing doctors in interviews and health officials kind of saying that it was safe, and it's a really difficult thing because as a parent you want to make your decisions based on what medical experts say". (Mother that immunised her son)</i></p>	<p><b>Limitations identified by author:</b> The sample is not necessarily representative if the population.</p> <p>It was not possible to determine, the percentage of parents using each of the three identified strategies for coping with uncertainty, or the extent to which parents relied on the strategies.</p> <p>It was not possible to evaluate parent's agreement with the interpretations</p> <p><b>Limitations identified by review team:</b> Demographic details of the sample population was not clearly defined.</p> <p>Exclusion criteria were not specified</p>

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<p>Children's health and the social theory of risk: Insights from the British measles, mumps and rubella (MMR) controversy</p> <p><b>Year:</b> 2007</p> <p><b>Journal:</b> Social Science and Medicine</p> <p><b>Volume:</b> 65</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> A</p>	<p>and interviews followed a semi-structured format, asking parents to describe their experiences of deciding whether to give the MMR vaccine to their children.</p>	<p>refusing the MMR vaccine</p> <p><b>How many participants were recruited:</b> 77 mothers and 10 fathers Focus groups (n=16) and individual interviews (n=71)</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> Parents were given written information about the study and an opportunity to ask questions, and provided written consent to participate. No further details provided</p>	<p>Parents valued the experience and training of health professionals and were reassured by the existence of professional codes of practice for these professions. <i>"Yeah. Because I feel, well, they've been trained to do their job and they're a lot more qualified than I am. And yes, I'm using them. You know, well, I'm putting my children in their trust". (Mother that immunised son with MMR)</i></p> <p>Personal relationships with medical professionals were extremely important for parent's trust. In particular, taking time to listen to parents and small gestures of concern that demonstrated competence and interest in parent's concern often fostered trusting relationships. Parents often felt reassured to learn that the health professionals had given their own children the MMR vaccines. In contrast, advice from healthcare practitioners, without such trusting relationships, was often said to be 'biased'. <i>"I felt that she had given me a kind of brain-washed answer. That she'd been told, you know, "If parents want information then we need to get across the importance of having the jab and tell them that's what they ought to be thinking and doing" rather than saying "OK, if it was my children". I didn't feel that she was being honest with me". (Mother that immunised her children)</i></p> <p>An alternative strategy for dealing with uncertainty and contradictory information was to embrace ambivalence through compromise solutions, such as delaying vaccination and opting for single vaccines. Delayed immunisation gave parents who were torn between fear of the vaccine and fear of not immunising more time to make a decision. Older, bigger children were presumed to be more capable of handling a challenge to the immune systems to 'develop' meant they would be less susceptible to side effects or 'immune overload'. Some parents chose to wait until their children had passed the age at which autistic symptoms were said to become manifest before</p>	<p>Age of children not specified</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed studies in broader population and settings, which are well defined, should be conducted</p> <p><b>Source of funding:</b> Wellcome Trust and Science Research studentship</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			<p>allowing them to receive the MMR.</p> <p>Parents who chose separate vaccines felt they offered the benefits of MMR whilst reducing the likelihood of problems caused by interactions of the three components. Parents who followed this course generally didn't see the time lag (ranging from a few weeks to three months) as being long enough to pose a threat.</p> <p><i>"Well, yeah, there is a time delay but we're only talking three months we're not talking three years or whatever and I think any child in the three months anything could happen". (Mother that immunised her daughter with separate vaccines)</i></p> <p>These parents also rejected the argument that separating the vaccines would result in lower immunisation rates. They had invested considerable time and money to find a provider and pay for the vaccines, so the suggestion that parents who wanted single vaccines for their children would not take their responsibility seriously enough to ensure that the children received the full course was considered offensive.</p> <p><i>"I was very tempted initially to get the single vaccines. The argument about parents not remembering seemed ridiculous. Of course you would remember to come back for the others". (Mother that immunised her son with MMR)</i></p> <p>Some parents ought to reduce uncertainty by identifying groups of children who seemed to be more likely to suffer adverse outcomes than others. Children who had allergies or digestive disorders had been born prematurely, were generally unwell, or had a family history of these problems or of autism were seen as more likely to be damaged by the MMR. Boys were sometimes seen to be at greater risk, because the prevalence of autism is greater among boys.</p> <p><i>"He was quite an unhappy newborn. I think he had colic and various other things. We ended up deciding that he had some sort of problem with his digestion... Then I met a</i></p>	

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			<p><i>doctor in passing... he said that if your child has any problem with their bowel, he wouldn't have the MMR". (Mother that immunised her son with separate vaccines, not MMR)</i></p> <p>Parents ( not further quantified) also believed that some children were more vulnerable to measles mumps and rubella than others. Children who did not attend nursery or school were understood to be less at risk of catching an infectious disease. Some parents expected that if their children did contract a one of the diseases they would fare better than others. Other parents were particularly adamant that their children must have the MMR, because they had medical conditions that would make a case of measles or mumps especially dangerous for them.</p> <p>To decide whether to immunise their children with MMR, parents engaged in a process of : <i>"weighing the risks of vaccinating against the risks of not vaccinating"</i> (Mother, immunised her daughter with MMR).</p> <p>Social contexts, previous experiences and strong emotions played a significant role in parents' evaluations of the risks involved. While many parents accepted the MMR despite uncertainty about the possibility of it causing autism, for others even an extremely slight risk of autism was too great. The dramatic contrast between the children's apparently normal early development and the disturbing behaviours after MMR vaccination was particularly worrying: <i>"But then all the stories you hear were very scary and a friend of mine, a speech therapist, and she deals with two children whose parents are convinced that their child's had problems since having the MMR. Even though you can't prove it, to know someone that actually knows children who have changed quite dramatically was quite Scary". (Mother, planning to immunise her child with MMR)</i></p>	

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			<p>Other health problems, such as allergies and asthma, which had not been highlighted in the media coverage, were also frequently cited as potential risks from the vaccine:  <i>"I read that they carried out a survey on children who had been breastfed for the first six months, and half of them were vaccinated and half of them hadn't, and they found that the ones who had been vaccinated were five times more likely to get asthma. Which is quite considerable really". (Mother, did not immunise her child with MMR)</i></p> <p>Many parents also mentioned concern about 'overloading the immune system' and felt it was too taxing for a child to receive any three vaccines at the same time:  <i>"Since giving her the single [measles vaccine] we've spoken to a geneticist who says that there is quite a strong link between overloading the system with vaccines and, not autism, but actually overloading your system leading on to other problems. (Mother, immunised her daughter with separate vaccines, not MMR)</i></p> <p>Parents also queried the multiple immunisations routinely given to younger infants, but were more inclined to accept those vaccines because there was less media attention challenging their safety and because the diseases being immunised against, especially polio and meningitis, were particularly frightening.</p> <p>Different risks, including potential exposure to infectious diseases and social risks, attended the decision not to immunise one's children with the MMR. Most parents cited the potential fatality of measles as grounds for serious concern. Many knew or had heard of people who suffered blindness or other complications of measles. Even parents who did not plan to immunise their children said that they might reconsider their decision if measles emerged locally. Some parents' memories of measles being a common childhood illness made this prospect less frightening.</p>	



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			<p>“Things like mumps and measles I had them when I was little, and so I was fine”. (Mother, did not immunise her children for measles, mumps or rubella).</p> <p>A different, but very important, type of risk that parents perceived from not allowing their children to be vaccinated was the social risk of being seen as a bad or irresponsible parent.</p> <p><i>“When [the GP] found out that I wasn’t going to have Sara immunised she really put this huge guilt trip on me. So, I felt quite dejected when I came out and felt I was a bad parent”. (Mother, did not immunise her children for measles, mumps or rubella)</i></p> <p>Parents who were unsure about their decision or placed a high value on being respected by health workers, feeling that they would be viewed as bad parents did make them more likely to comply with medical advice. Being removed from GP patient lists (to boost the percentage of immunised patients and thus secure the GP’s target payment) was an extreme consequence of this social risk that some parents feared.</p> <p>Children were vulnerable, passive recipients of their parents’ and health workers’ actions, but would ultimately bear the full consequences of those actions.</p> <p><i>“Who do you love more than your children? You want to know am I putting him at unnecessary risk? So that’s the other thing that makes it hard, is that you’re not just deciding it for yourself, you’re deciding it, with your best intentions for somebody else”. (Mother, immunised her children with MMR)</i></p> <p>Well over a third of the informants spontaneously mentioned contributing to the ‘herd immunity’ of the population by vaccinating one’s own children, as a parent’s responsibility to the community. However, parents also said</p>	

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			<p>that their own children's health and safety was a more important concern than the small contribution to the health of the population that they could offer by vaccinating their children—even when they generally supported immunisation to protect the wider population.</p> <p><i>"My own children's health and safety is more important than the impact on the population. I don't want you to think that I'm not putting my children first that I'm putting the population first because that's not the case. But I feel by protecting them I'm also protecting the population. But by protecting the population I'm protecting them. It's sort of two ways". (Mother, immunised her children with MMR)</i></p> <p>Parents who feared that the vaccine was unsafe clearly resisted the notion that their children should assume this risk in order to help protect others from infection. When parents perceived their own child's vulnerability to measles, mumps and rubella to be low, or their vulnerability to harmful effects from the vaccine as particularly high, then immunising in order to protect others in the community was less appealing. Rubella was a special case in point because childhood infection is not particularly dangerous; the rationale for widespread childhood immunisation against rubella is to protect against congenital rubella syndrome caused by infection in utero.</p> <p><i>"I guess for me, every now and again I feel guilty because I feel, well maybe if I did have my children vaccinated then there would be a chance that this illness would not be around at all. But then, well then I think actually those statistics are probably very much connected to children who aren't necessarily you know, living in such good conditions as mine are and aren't as healthy." (Mother, did not immunise her children)</i></p> <p><i>"The government aren't worried about my child, they're actually worried about protecting pregnant women [from rubella infection]." (Mother, immunised with separate</i></p>	

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			<p><i>measles, mumps and rubella vaccines)</i></p> <p>Parents did not accept the government's decisions until they had evaluated the relevant evidence themselves.  <i>"I think a lot of this has been on trust. But trust in an informed, knowledgeable way, not just trust for trust's sake. I don't think I'd trust any government unless there was facts and figures to back up what they were saying." (Mother, immunised her child with separate vaccines, not MMR)</i></p> <p>In contrast to government political agendas, medical practitioners' advice was generally trusted when they showed concern for the individual child, as opposed to merely protecting the population or their own professional reputations. Thus, personal relationships with medical professionals were extremely important. When doctors engaged in discussions about the frightening stories that parents had heard about the vaccine, and shared their own stories about making such decisions as a parent or about positive experiences of MMR vaccination, parents were reassured that their concerns had been taken seriously.</p> <p>Parents were concerned that epidemiological evidence would overlook some children who might have really been harmed by the vaccine. If the reaction was real but extremely rare, then these children would not 'show up' in the statistical analyses</p> <p>Twelve parents said they wanted more research concentrating on detailed case studies of those children. These parents felt that this would enable better understanding of the risk posed by MMR to a small minority of children.  <i>"There are work [sic] that are picking up on the vaccine strain virus in the gut of some of these kids. More research into the actual biology probably [is needed]. Hands on, you</i></p>	

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			<p><i>know. Rather than the sort of broad things.” (Mother, did not immunise her son against measles, mumps or rubella)</i></p> <p>These parents took a fundamentally different epistemological approach to the problem than the epidemiological one used by the health authorities. They demanded a different type of evidence, focusing on the anecdotal accounts of dramatic behavioural changes that parents had observed in their own children.</p> <p><i>“And to me the clinching thing on why I wanted the single vaccines was the parents on the television that were showing their children. That these parents were so convinced that it was the MMR. They truly believed that, do you know what I mean?” (Mother, immunised her daughter separately and with MMR)</i></p> <p>Parents' placed great importance on the other parents' claims because she felt parents know their own children better than anybody else and are in a unique position to notice changes in their behaviour. The challenge for doctors and scientists is to find ways of taking seriously these experiences while interpreting other types of evidence, such as that provided by epidemiology</p>	

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<p><b>(Casiday et al. 2006)</b></p> <p><b>Title:</b> A survey of UK parental attitudes to the MMR vaccine and trust in</p>	<p><b>What was/were the research questions:</b> To determine the level of agreement, among both MMR accepting and MMR-refusing parents in a PCT population, with statements about (a) the safety of MMR vaccine, (b) single-antigen vaccines, (c) the importance of immunisation, and (d) trust in medical authority.</p>	<p><b>What population were the sample recruited from:</b> The study population comprised all households with a child registered with the Primary Care Trust (PCT) in North-East England, born between 1 October 2000 and 30 September 2002 whose address could be determined</p>	<p><b>Brief description of method and process of analysis:</b> Chi-square tests were used to evaluate between-group differences in the responses of MMR-accepting parents and MMR-refusing parents. Logistic regression was used to evaluate the relationship between MMR acceptance and parental education (university degree versus no degree), occupational class (1–2 versus 3–8), the interaction between education and class, parental age and number of children.</p>	<p><b>Limitations identified by author:</b> Respondents were from higher socio-economic classes and had higher levels of educational qualification than the general PCT population (as is often the case with postal survey research). Therefore, caution must be</p>

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<p>medical authority</p> <p><b>Year:</b> 2006</p> <p><b>Journal:</b> Vaccine</p> <p><b>Volume:</b> 24</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b> A</p>	<p>To determine what sources of information parents had accessed, and which were considered most useful.</p> <p>To examine differences between MMR-accepting and MMR-refusing parents in attitudes, use of information about MMR vaccine, socioeconomic status and education.</p> <p>To estimate the uptake of single-antigen vaccines among children not immunised with MMR, and thus to provide an estimate of overall immunisation coverage for measles, mumps and rubella.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> The questionnaires was developed and piloted in a course of extensive qualitative interviews with parents</p> <p><b>How were the data collected:</b> Parents located with Durham primary care Trust, who returned a consent slip to the Principal Investigator (RC) then received a postal questionnaire with stamped return envelope. No other details provided</p>	<p>using the Child Health Information System (CHIS).</p> <p><b>How were they recruited:</b> A letter from the Director of Public Health (TC) was mailed to parents at these households (n= 2742) in May 2004, explaining the study and inviting them to participate. Parents who returned a consent slip to the Principal Investigator (RC) then received a postal questionnaire with stamped return envelope.</p> <p><b>How many participants were recruited:</b> N=996 (90.0%) returned completed questionnaires, representing 36.3% of all parents invited to participate</p> <p>Sample size was calculated to detect differences in responses between MMR-accepting and MMR-refusing parents, at the 0.90 power level and 0.05 significance level, assuming a 1 in 6 MMR refusal rate and a 30% postal survey response rate</p> <p><b>Were there specific exclusion criteria:</b> NR</p>	<p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Immunisation data showed that 889 of the 'responding' children (89.3%) had received the MMR vaccine. 72 (7.2%) had embarked on a course of single-antigen vaccines. 19 (26.4% of those who had embarked on the course) had received all three immunisations. 31 children (3.1%) had received neither MMR nor single vaccines. 4 respondents (0.4%) did not provide data on immunisation uptake. Immunisation against mumps had the lowest uptake of the three antigens, with 91.4% coverage among all target children and 20.4% coverage among children not immunised with MMR vaccine.</p> <p>Only number of children predicted MMR acceptance (OR = 0.713, <math>p = 0.021</math>).</p> <p>MMR-accepting parents had larger families than MMR-refusing parents (<math>p = 0.020</math>), but there was no association between MMR-acceptance and parental educational attainment (<math>p = 0.970</math>), occupational class (<math>p = 0.282</math>), or age (<math>p = 0.628</math>).</p> <p>There was no significant association between educational attainment or occupational class and uptake of single-antigen vaccines (<math>p = 0.438</math> and <math>p = 0.638</math>, respectively) in parents who had refused the MMR.</p> <p>As expected, MMR-refusing parents were far less likely to agree that scientific evidence has shown the vaccine to be safe (no link with autism) than parents who had given it to their children (<math>p &lt; 0.00001</math>).</p> <p>76.5% of the MMR-accepting parents felt that more time was needed to investigate the vaccine's effects, while 68.2% said that potential complications of the vaccine could be serious for children (<math>p &lt; 0.00001</math>).</p>	<p>used when interpreting the findings in relation to all parents in the general population</p> <p>Acceptance of MMR vaccine was not associated with parental education, occupational class or parental age, but with larger family size, in this sample. This finding may represent increased confidence in the vaccine among parents who had already immunised an older child, but could be due to sample bias and should be interpreted with caution.</p> <p><b>Limitations identified by review team:</b> Exclusion and inclusion criteria not clearly specified</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings should be conducted</p> <p><b>Source of funding:</b> The Wellcome Trust, under the Public Engagement with Science Research Studentship scheme</p>

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		<p><b>Were there specific inclusion criteria:</b> NR</p>	<p>Parents were also ambivalent about the appropriateness of separate vaccines as an alternative to the MMR. 51.2% of the MMR-accepting parents felt that separate vaccines were safe, compared with 82.7% of MMR-refusing parents (<math>p &lt; 0.00001</math>). Only one parent whose child had had separate vaccines disagreed with this statement, whereas 14 (45.2%) of the parents whose children had received no vaccines for measles, mumps and rubella agreed.</p> <p>A high proportion (29.1% overall) of parents did not agree that children were at risk from the time lag between separate vaccinations and 43.8% overall, did not agree that a lot of people would not show up for all three vaccines if they were offered separately by the NHS (<math>p &lt; 0.00001</math>).</p> <p>Parents in both groups indicated support for vaccination in principle, although this was higher among MMR-acceptors than among MMR-refusers.</p> <p>95.5% of parents agreed that measles is a very serious Disease, although 80.2% of both acceptors and non acceptors convinced that their children were actually likely to contract the disease if not immunised: which was higher for (84.2%) MMR acceptors than MMR refusers (47.7%).</p> <p>Parents made a distinction between 'doctors' and 'my doctor,' trusting their own doctors far more than the medical establishment to take their concerns seriously. Whereas 52.5% of the respondents overall felt that doctors are too dismissive of parents' claims about vaccine side effects, 81.6% of parents felt that their concerns about MMR were taken seriously by their own doctors. Among MMR-refusing parents, 88.7% felt that doctors were too dismissive of parents' claims about side effects, whereas half felt that their concerns were taken seriously by their own doctor (<math>p &lt; 0.00001</math>).</p>	

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			<p>The responses to questions about Government indicate a considerable level of distrust in the government's role in regulating risk, particularly among the MMR-refusing parents with only 39.4% agreeing that the government would stop MMR if there was evidence of a serious risk and 41.6% agreeing that the government does a good job in protecting us from risks to health. Responses to the two questions about the government were also highly correlated (<math>p &lt; 0.00001</math>).</p> <p>934 parents (93.8%) had consulted one or more sources of information about the MMR vaccine. Health visitors and the 'MMR the Facts' leaflet were the most frequently consulted sources (consulted by 64.1 and 60.7% of parents, respectively). MMR-refusers were more likely than MMR acceptors to have used health visitors, general practitioners, anti-MMR organisations and other sources of advice (<math>p &lt; 0.00001</math>). Parental satisfaction with the information sources was generally high, although MMR-accepting parents were more likely to find NHS sources to be useful.</p>	

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<p><b>(Evans et al. 2001)</b></p> <p><b>Title:</b> Parents' perspectives on the MMR immunisation: a focus group study</p> <p><b>Year:</b></p>	<p><b>What was/were the research questions:</b> To investigate what influences parents' decisions on whether to accept or refuse the primary MMR immunisation and the impact of the recent controversy over its safety.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Modified grounded theory</p>	<p><b>What population were the sample recruited from:</b> Parents in Avon and Gloucestershire</p> <p><b>How were they recruited:</b> NR</p> <p><b>How many participants were recruited:</b> Number of participants 48 (43 female, 5 male)</p>	<p><b>Brief description of method and process of analysis:</b> Transcribed data were analysed using modified grounded theory techniques by the research team. The transcripts were scrutinised, emerging themes and sub-themes were agreed, and an initial coding index was developed. Sections of text were coded and these codes were applied to subsequent transcripts. Further codes were added as new themes emerged. Three members of the team coded some transcripts independently and a high level of consensus was achieved. Microsoft Word was used to develop individual files for each theme, allowing the text to be sorted and analysed in detail.</p>	<p><b>Limitations identified by author:</b> Over half the participants were highly educated and the mean age was 35 years, limiting generalisability.</p> <p>Since the research was conducted new research emphasising the safety has been published.</p>

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<p>2001</p> <p><b>Journal:</b> British Journal of general Practice</p> <p><b>Volume:</b> 51</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> A</p>	<p><b>How were the data collected:</b> Six focus groups were held with parents in Avon and Gloucestershire. Three groups comprised parents who had accepted MMR for their youngest child ('immunisers') and three comprised parents who had refused MMR ('non-immunisers'). Their children had a range of histories for immunisations other than MMR. Each focus group was facilitated by a moderator and assisted by a different member of the research steering group. The discussions were tape-recorded and fully transcribed. The moderator used a series of open-ended questions about child health, attitudes towards immunisation, the decision-making process, and the effects of the media and other influences on immunisation decisions, but participants were encouraged to explore issues about immunisation that were important to them. The discussions lasted between one and two hours and were held in a convenient location for the parents where a crèche was provided. Data collection and analysis proceeded simultaneously</p>	<p>Age range 22–48 years (mean = 35 years) Family size 17 families had 1 child 19 families had 2 children 10 families had 3 children 2 families had 4 children Marital status Married or co-habiting 44 Single 4 Qualifications GCSE certificate 12 NVQ or other diploma 10 Degree 26</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> Sampling was purposeful, so that parents were included from a variety of socioeconomic backgrounds who had either accepted or refused MMR immunisation for their youngest child, aged between 14 months and three years at the time of recruitment.</p>	<p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Immunisers and non-immunisers shared many similar views about the MMR vaccination.</p> <p>All parents perceived that MMR brings potential benefits and potential risks for their children. Immunisers tended to stress the benefits of immunisation and the dangers of the diseases to a greater extent than the nonimmunisers, they still remained unhappy about MMR and its possible association with childhood autism and bowel disorders. Parents in all the groups talked about their anxiety over this possible association. <i>You have this doubt in your mind, however small I may feel it may be ... autism ... Crohn's disease ... why put parents through the anxiety of thinking, 'Well did I do it by giving them the immunisation or would it have occurred naturally?' V (Non-immuniser.)</i></p> <p><i>A friend's child was, you know, described as autistic and you think, this was after his MMR, it may not have been as a result of that but it does make, if it's close to home it makes you think. L (Immuniser.)</i></p> <p>Herd immunity was discussed and non-immunisers realised that, by refusing MMR, their children might contract the diseases and did not rely on herd immunity to protect their children. However, they felt that the risk of serious complications from the diseases was small in a country such as the United Kingdom, with generally good standards of health and nutrition. This view was also shared by the majority of immunisers. <i>'I mean in the Third World obviously it's a killer, I don't believe that measles is a killer here, I haven't heard of anybody dying.'</i> C (Immuniser.)</p>	<p><b>Limitations identified by review team:</b> Recruitment method not reported.</p> <p>No comparison made between immunisers and nonimmunisers.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings should be conducted</p> <p><b>Source of funding:</b> NHS Executive South West Regional R&amp;D Directorate</p>



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			<p>The majority of parents (no further details) felt they could reduce their children's susceptibility to contracting diseases and developing serious complications by maintaining their general health.</p> <p><i>'We tend to think while they're healthy it's not going to be... the chances are so small of any serious complication that it's probably better that they catch the things.'</i> I (Non-immuniser.)</p> <p><i>'The vulnerable children are the ones who don't have good diet or who are from, you know, poorer backgrounds and who obviously are more open to infection in the first place if there are epidemics.'</i> R (Non-immuniser.)</p> <p>Most parents had contracted some or all of the diseases in their own childhood, but their personal experiences were not good predictors of their own child's immunisation status. For example, many who had suffered measles severely did not immunise their children.</p> <p><i>'I had measles at six or something and it allegedly damaged my eyesight very badly but, and I wear lenses now, I'm very blind but, I still would rather run the risk that Gcatches it sometime now and we catch it quickly enough to put him in bed and so on, than expose his immune system at the age of whatever, a year, to something [vaccination] that may or may not have serious effects on the system itself.'</i> I (Non-immuniser.)</p> <p>Parents generally felt that it was important to develop their child's 'natural immunity' through exposure to mild infections. For many non-immunisers, this included early exposure to measles, mumps and rubella. In contrast, they felt the combined immunisation might be harmful to the child's immune system.</p> <p><i>'It's very healthy to have them and it's a positive benefit to the child to actually have those illnesses properly, not a kind of half-hearted thing after the vaccination which does</i></p>	

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			<p><i>happen.” W (Non-immuniser.)</i></p> <p>Vaccines in general were perceived by some of the nonimmunisers as placing stress on a child's immature immune system, with possible short and long-term consequences for their health. For example, an increased susceptibility to allergies, asthma, and eczema was mentioned, and the potential for developing autoimmune diseases, cancer, and AIDS. Non-immunisers also cited the process of vaccine production and the use of animal products as further disincentives to immunise.</p> <p>A minority of non-immunisers (no further details) also believed that having the diseases assisted the child's psychological and physical development and enhanced family relationships. Non immunisers were less fearful of diseases in general, perceiving that they were a necessary part of the spectrum of life and the balance of nature. They reported that they would prefer their children to contract the diseases while they were young to avoid a more severe infection or more serious complications when older, such as male sterility from mumps or congenital rubella syndrome in pregnancy Many parents were confused about the role of breast feeding in promoting immunity, as they were told that this transferred maternal immunity, but that immunisation was also necessary.</p> <p><i>I've just been told that ... breast feed ... you get immunised I wonder why the pressure. I feel that the medical profession can't have it both ways, they say breastfeed because the baby gets your immunity therefore well, why have vaccinations then until you stop.' C (Immuniser.)</i></p> <p>All parents felt that immunisation was associated with some risk and very few approached MMR with complete confidence. Although some parents were opposed to all immunisations, many more had concerns specifically about MMR, especially the widely publicised possible association with Crohn's disease and autism. <i>I'm not actually anti-</i></p>	

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			<p><i>vaccines, I'm quite sort of pro-vaccines, it's MMR in particular that I have a problem with.</i>' C (Non-immuniser.)</p> <p>For many parents in all groups, the three separate vaccines for measles, mumps, and rubella were seen as a safer option and one which placed less stress on the immune system. Vaccine effectiveness was generally accepted by immunisers, despite some knowing immunised people who had developed the diseases. All groups, however, were concerned about the duration of protection from MMR, with the need for an MMR booster raising doubts about its long-term effectiveness. <i>'I would prefer to give my child protection against MMR naturally through catching the disease than have to keep boosting him for however long it takes.'</i> H (Non-immuniser.)</p> <p>Many non-immunisers felt that the immunisation programme should be targeted at specific 'high risk' groups; for example; rubella immunisation for teenage girls, or mumps for boys. Data from this study therefore showed that parents went through a process of weighing up the risks and benefits of immunisation, but this process does not fully explain the decisions they made. For example, many who perceived the risks of MMR to be very small still found it unacceptable. <i>'They still cannot categorically say the vaccine is safe and until, however small the doubt in my mind is, I feel probably it is safe but I can't live with that and until someone can categorically say that it's going to be all right, it's not going to be acceptable to me.'</i> V (Non-immuniser.)</p> <p>The media publicity about the possible link between MMR, autism, and Crohn's disease had raised doubts in the minds of people who had not previously questioned the safety of immunisation.</p> <p><i>'It was because of the media and the press that I looked into the MMR and decided well whoa, I'm not having that you know, otherwise, before, I didn't just didn't think</i></p>	

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			<p><i>anything of it.</i>' C (Non-immuniser.)</p> <p>Reassurances about the safety of the vaccine issued by the Department of Health were treated with scepticism as parents felt that their concerns had not been adequately addressed. Many parents (no further details) believed that the possible link with autism and Crohn's disease was not resolved, so were unwilling to accept MMR.</p> <p><i>There is a question mark behind the MMR whether that's proven or not there was a question mark, enough for me to sit down and think about it and I think they misjudged that completely ... people do want to know these days, that's the era we're living in ... don't just pat us on the head and say Oh you'll be OK.</i> A (Immuniser.)</p> <p>Generally parents did not have confidence in statements issued by the government about the safety of MMR. Parents had therefore obtained other information from a variety of sources, to investigate the safety of MMR. Although parents were generally well informed about immunisation, they reported that inadequate information had hampered their decision-making process. Apart from consulting health professionals, parents consulted family and friends, the Internet, and a range of 'alternative' books and articles. They felt that much of the available information was biased, either strongly pro-immunisation anti-immunisation.</p> <p><i>There doesn't seem to be anything balanced does there, there's either the government sort of, yes, you know it's definitely very safe and every child should have it or there's the other side where, you know, they shouldn't have any etc, and it's very hard to try and work out from those two what to do.</i>' A (Non-immuniser.)</p> <p>Parents suggested that more information from independent sources should be easily available at GP surgeries and community clinics. Currently available leaflets were felt to</p>	

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			<p>be limited in scope and failed to address their concerns. <i>But that's very confusing isn't it, as a parent because you obviously want the best for your child and when you see all these reports ... and you're trying to look at it and make an educated decision .... I think just basically there's a complete lack of information ... I think there needs to be something a bit sort of totally universal that everyone can sort of get their hands on and that's independent' cause I think people are just either way polarised.'</i> H (Immuniser.)</p> <p><i>It is impossible to get figures that we know are objective and trustable.'</i> I (Non-immuniser.)</p> <p>Parents often found it difficult to have an open discussion with health professionals about the risks, benefits, and options for immunisation, which they felt would have helped them make an informed decision. In fact, they reported unwelcome pressure from professionals to accept immunisation and many immunisers had accepted MMR because of this pressure rather than making an informed choice, feeling that it was easier to comply than to refuse. <i>Sometimes the doctors and nurses at the surgery can be too much you know, you must have it, you know? And that's what puts a lot of people's backs up doesn't it really, your choice is gone a bit isn't it?' B (Immuniser.)</i> <i>I, it was really just ... bowed under the pressure that we had the vaccination done, I think.'</i> A (Immuniser.) <i>We thought long and hard before we had the immunisation done and we're still not happy having had it done.'</i> K (Immuniser.) <i>You're sort of shoved into it because you think it's the right thing, but you do feel like it's the lesser of the two evils.'</i> L (Immuniser.)</p> <p>Many felt afraid to ask questions in case they were labelled as a 'nuisance'. <i>'I'm sure they've got it on my file, "neurotic mother".'</i> N (Immuniser.) <i>'They put red all over the notes,</i></p>	

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			<p><i>red pen, they write REFUSED in big red letters all the way across the child's medical notes so they've sort of got 'difficult parent' in their mind!' L (Non-immuniser.)</i></p> <p>However, for non-immunisers, this pressure to comply made them more resistant to having the immunisation, although some also described how difficult it felt to go against medical advice. <i>'But it's hard isn't it if you begin to make an enemy of your doctor by pushing things then you can feel very out on a limb.'</i> W (Non-immuniser.)</p> <p>Several examples were given of non-immunised children being offered opportunistic immunisations in accident and emergency departments, or during a hospital admission, which parents felt was both inappropriate and distressing. Parents recognised however, that health professionals are themselves under pressure to reach immunisation targets. <i>'All credit to health visitors but they toe the government line, there's no choice about it.'</i> A (Immuniser.) Non-immunisers were particularly concerned about receiving payments for achieving immunisation targets. Because of this, parents worried that the recommendations of health professionals may partly be motivated by financial factors and not purely by the child's best interests.</p> <p><i>Because the GP's funding is based on their quota of immunised children that's something that made me very suspicious about the whole thing. I've got to have immunisation for my child because otherwise they won't get their funding, that's already weighted isn't it.'</i> L (Non immuniser.)</p> <p>However, health visitors and doctors who discussed immunisation issues openly with parents were highly valued; parents suggested that designated times for discussions about immunisation with health professionals should be considered, such as meeting in a group during antenatal education or postnatal support. They also wanted to receive information before their scheduled immunisation</p>	

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			<p>appointment and suggested this could be sent out with the immunisation appointment card. This would enable further discussion and reflection before their decision was reached.' <i>I can't believe that in this day and age they can't get the information across to the parents.</i>" N (Immuniser.) <i>I might not have had the MMR vaccination, I was given the fact sheet after my son had had it, which I was a bit cross about.</i>' C (Immuniser.)</p> <p>Many of the non-immunisers had had their older children immunised, but had changed their views over time as they reported feeling more confident about questioning professional recommendations and exploring alternatives as their experience as parents grew.</p> <p>The potential conflict between government policy setting immunisation targets and the rights of parents to make their own choice about immunisation was an important issue for the parents. <i>They [the government] are making decisions for what they see as society as a whole and we're making decisions for our individual children so we are polarised to start with.</i>' R (Non-immuniser.)</p> <p>There were concerns about the financial incentives offered to GPs for achieving immunisation targets and other vested interests, such as the investment of pharmaceutical companies in the production of MMR. <i>What I wish is that they wouldn't pretend it was value free ... to pretend money isn't a part of it, I find that really irritating.</i>' W (Non-immuniser.) Many participants had been parents over a long period of time and had experienced several policy changes about immunisation, which made them believe more strongly that they should follow their own instincts. <i>I resent being told by a GP that I have to have something done because it's better for the population and I want to challenge that somehow.</i>' H (Non-immuniser.)</p> <p>All groups emphasized that parents should be able to</p>	

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			<p>choose which immunisations, if any, their children received, and they all wanted the single vaccines for measles, mumps, and rubella to be available as an alternative to MMR. Parents felt that the promotion of MMR was partly based on considerations of cost and convenience, such as the potential difficulty in tracking individuals for separate immunisations, factors which are not generally discussed. <i>'We were angry that we were not given a choice, that it had to be the combined three together, why they couldn't split it ... We were told no you couldn't ... we were never given that choice, we were just told this is how it is ... why are we not allowed to have it, why is there not the option to have any of those three separate vaccines?'</i> K (Immuniser.) <i>Just because it's easier and cheaper for the government to deal in those triples, doesn't mean that if you want them as single vaccinations you should be, you know, you should be able to have that.</i> J (Non-immuniser.)</p> <p>Many parents who had refused MMR said they would accept some or all of these single vaccines. <i>I feel quite clear that I would have my children vaccinated against measles as a single vaccine but I'm not happy with the options available ... I only hope that if we do make a stand they will release a single one.</i> CC (Non-immuniser.)</p> <p>In addition, most parents felt that giving MMR at an older age would rule out any coincidental association with autism. Some non-immunisers had delayed having MMR, and were planning to have it just before school entry, but only some GPs had agreed to such arrangements. While acknowledging the role of immunisation in keeping disease incidence low in the population, parents' overriding concern was for the health of their own children, which was more important to them than any commitment to the societal benefits of immunizations. <i>I think primarily your first thought is, Oh yes, my child and I want to protect them and then as a knock-on effect, as a</i></p>	



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			<p><i>secondary effect, if you like, the fact that it's going to help everybody is a great — that's good, that's a bonus — but I think the primary thought is — how it will benefit your child.</i> H (Immuniser.)</p> <p>Although a few immunisers felt that non-immunisers were 'irresponsible', the majority respected the opinions and decisions of others. Peer pressure was not a significant factor in their decision; more importance was placed on people making their own choice. However, some non-immunisers felt they had been criticised for not immunising their children and reported feeling unwelcome at playgroups or being removed from GP lists.</p>	

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<p><b>(Gellatly, McVittie, &amp; Tiliopoulos 2005)</b></p> <p><b>Title:</b> Predicting parents' decisions on MMR immunisation: a mixed method investigation</p> <p><b>Year:</b> 2005</p> <p><b>Journal:</b> Family Practice</p>	<p><b>What was/were the research questions:</b> To investigate factors relevant to immunising and non-immunising parents and the extent to which these factors predicted their decisions for and against MMR vaccination of their children</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> The Delphi technique facilitates the aggregation of individual views on a topic and enables the researcher 'to explore or expose underlying assumptions or information leading to differing judgments</p> <p><b>How were the data collected:</b> A two-stage mixed design, comprising Delphi technique followed</p>	<p><b>What population were the sample recruited from:</b> A group comprising five nurseries was selected, because the nurseries in this group did not restrict access to particular groups and the nurseries were located in postcode areas with a range of socio-economic characteristics that reflected those found within the local population and spanned the classes of The National Statistics Socio-economic Classification 2001.</p> <p><b>How were they recruited:</b> a cluster sampling approach was used, where all parents (n=185) whose children attended 5 nurseries were</p>	<p><b>Brief description of method and process of analysis:</b> The factors in the final questionnaire were analysed against vaccination status using a direct binary logistic regression model and Pearson's moment product correlation.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Seventeen variables had a statistically significant relationship with vaccination status (<math>p &lt; 0.05</math>). Those were: the importance of the perceived risk of someone immunised with the MMR vaccine to develop (1) autism, (2) bowel disease, (3) Crohn's disease, (4) other allergic reactions, and (5) to overload the immune system; importance of protection from (6) rubella, and (7) measles, mumps, and rubella in one dose; (8) influence of current research, (9) GPs' opinion, (10) health visitors' opinion, (11) lack of information on single vaccines, and (12) nature of long-term effects; helpfulness of (13) government pressure, (14) government health advice, (15) GPs' advice, (16) health visitors' advice, and (17) information packs.</p>	<p><b>Limitations identified by author:</b> Data confined to the study of immunisation decisions within one geographical location and needs to be extended to obtain a more general picture</p> <p><b>Limitations identified by review team:</b> Small sample size</p> <p>Not clear why only subgroups of the population were sampled.</p> <p>No data reported for the baseline characteristics between the sub-sample included in the study and the rest of the population.</p>

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<p><b>Volume:</b> 22</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score:</b> B</p>	<p>by attitude questionnaires. The study was conducted in Edinburgh, UK between December 2003 and May 2004.</p> <p>The questionnaire was completed by a sub-sample of 15 randomly selected individuals from the parents that had agreed to participate, comprising 8 immunising (53.3%) and seven non-immunising (46.7%) parents. From the analysis, a second questionnaire was prepared. The sample comprised the 15 participants responding in the first Delphi round</p>	<p>invited to participate (no further details provided)</p> <p><b>How many participants were recruited:</b> Of the parents contacted, 110 (60.4%) agreed to participate.</p> <p>The median age of the participants' youngest child was 21 months (range one month to 59 months), with 49 (44.5%) of them being female. All parents had at least one child of vaccination age. Eighty participants (72.7%) had had their child vaccinated with the MMR vaccine, while the rest had refused the vaccine</p> <p><b>Were there specific exclusion criteria:</b> Five participants who returned incomplete responses were excluded from the final analysis</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p>The influence of current research was the strongest predictor, indicating that parents who viewed research findings as more important were approximately five and a half times as likely not to vaccinate their children than those who did not (OR = 0.18, 95% CI = 0.07–0.51, prediction toward 'yes vaccination' status).</p> <p>Parents who found useful the information contained in leaflets and packs were more than three times as likely to vaccinate their children than those who did not (OR = 3.27, 95% CI = 1.38–7.75).</p> <p>When the eradication of rubella was perceived as more important, it increased the likelihood of vaccination by 2.4 times (OR = 2.42, 95% CI = 1.01–5.78).</p> <p>Parents who viewed the risk of adverse reactions as more important were approximately one and a half times as likely not to vaccinate their children than those who did not (OR = 0.65, 95% CI = 0.48–0.87, prediction toward 'yes vaccination' status).</p>	<p>Baseline characteristics between MMR vaccine refusers and non-refusers not reported</p> <p>Therefore, generalisability of findings limited</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Research is required to explore in greater detail the formation of parental perceptions both of research findings and of the risks of adverse effects</p> <p><b>Source of funding:</b> Authors report no external funding was received</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
(Henderson)	What was/were the research	What population were the	Brief description of method and process of analysis:	Limitations identified by

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<p><b>et al. 2004)</b></p> <p><b>Title:</b> General practitioners' concerns about childhood immunisation and suggestions for improving professional support and vaccine uptake</p> <p><b>Year:</b> 2004</p> <p><b>Journal:</b> Communicable Disease and public health</p> <p><b>Volume:</b> 7 (4)</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> B</p>	<p><b>questions:</b> To assess General Practitioners' views on vaccination issues</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Not specified. A semi-structured questionnaire was used based on questionnaires used in similar work elsewhere</p> <p><b>How were the data collected:</b> Semi-structured questionnaires mailed to General Practices for GPs to complete and return. No other details provided. Questionnaires completed without assistance from study authors.</p>	<p><b>sample recruited from:</b> All doctors working in General Practices across the Highland region (Scotland)</p> <p><b>How were they recruited:</b> Two mailings of anonymous questionnaires and separate numbered response slips were sent, which GPs were required to return. The second mailing was sent to those who failed to respond to the initial mailing.</p> <p><b>How many participants were recruited:</b> 206 completed questionnaires were returned (73% response rate)</p> <p><b>Were there specific exclusion criteria:</b> Non responders. No details provided</p> <p><b>Were there specific inclusion criteria:</b> All doctors working in General Practices across the Highland region</p>	<p>Responses were measured using a Likert Scale. Discrepancies were identified and corrected to ensure the accuracy of the information recorded. SPSS was used to undertake statistical analysis, using chi-squared tests.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> 28.3% of respondents described being either 'very concerned' or 'fairly concerned' about side effects believed to be associated with the MMR vaccine.</p> <p>7.3%, 5.9% and 5.4% of respondents described being either 'very concerned' or 'fairly concerned' about side effects believed to be associated with Men C, DTP-Hib and polio vaccines, respectively. The heightened concern felt about MMR compared to other immunisations were found to be statistically significant (<math>p &lt; 0.000</math>)</p> <p>A lack of familiarity with the side effect profile of some or all immunisations would appear to be an issue. <i>"The mass of immunisations makes it impossible to be certain of varying research into safety, efficacy, alternatives etc. for each one, except in the very broad sense." Male Principle</i></p> <p>Concerns regarding vaccinations in general exist among some doctors. <i>"I keep coming back to the Hippocratic Oath and the part that says "first do no harm". The problem for me is that we are giving these drugs (vaccinations) to the very young, whereas most drugs I prescribe are for older people. Anything we give our patients is potentially dangerous, and I have far less problem prescribing a fairly toxic cardiac drug to someone in their 60s than I would a baby." Male principle</i></p> <p>A lack of confidence in the MMR vaccine in particular was</p>	<p><b>author:</b> Cannot be certain that the findings represent the views of family physicians engaged in immunisation activity</p> <p>The lower uptake of MMR in the Highland region compared with the rest of the UK, may reflect the different views of GPs and parents in the region compared to elsewhere in the country. Although, there is no reason to believe that GPs views differ in their beliefs compared to practitioners elsewhere.</p> <p>Factors other than knowledge and attitudes of GPs may impact on MMR uptake.</p> <p><b>Limitations identified by review team:</b> The lower uptake of MMR in the Highland region compared with the rest of the UK limits generalisability</p> <p>Demographic details including age, gender, SES and literacy of parents not detailed</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies examining broader</p>

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			<p>also expressed.  <i>"The MMR debate poses possible problems. I remain not wholly convinced the safety profile of MMR has been proven beyond all reasonable doubt."</i> Male principle</p> <p>73.2%, 73.7% and 76.6% of respondents described being 'very confident' discussing Men C, DTP-Hib, and polio vaccines respectively. Only 57.1% described being 'very confident' discussing MMR. The reduced confidence with respect to MMR and Men C was found to be statistically significant (p&lt;0.001).  <i>"I am not 100% convinced that there is no link [with autism] with the measles element of the vaccine. Therefore, it is difficult to be 100% confident when discussing it with parents."</i> Female retainer</p> <p>Difficulties undertaking consultations regarding immunisations in general were also raised.  <i>"Patients' pre-formed ideas, provided mostly by inaccurate press and media reporting, provide a less than balanced playing field before discussion has even commenced."</i> Male Principle</p> <p><i>"Not enough time to do it properly. Concept of risk/benefit ratios and relative risk is lost on almost all patients – even the very educated ones will often just ask: "what do you do with your kids?""</i> Principle NR</p> <p>98% of respondents reported they believed that the benefits of being immunised 'likely' outweighed the possible risks for Men C, DTP-Hib, and polio vaccines. 91.7% and 85.7% felt this was true for the first and second doses of the MMR vaccine, respectively. The reduced confidence expressed in the benefits of MMR compared with other immunisations was statistically significant (p=0.007)  <i>"I continue to feel that in certain vulnerable groups there</i></p>	<p>populations and settings, in particular other health professional involved in delivering vaccinations</p> <p><b>Source of funding:</b> NR</p>

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			<p><i>may be some risks attached to MMR...I do not feel this has been adequately studied." Female Principle</i></p> <p><i>"I don't feel the safety of MMR in all children has been demonstrated. I am concerned there may be a subgroup of children in whom MMR causes problems that we haven't identified yet." Principle NR</i></p> <p>13.2% and 11.7% thought an association with autism and Crohn's disease respectively was 'possible' with the MMR vaccine. 16.2% did not know that idiopathic thrombocytopenic purpura was associated with the MMR vaccine, whilst 18.7% believed that a link with subacute sclerosing panencephalitis was 'likely' or 'possible' with the MMR vaccine.</p> <p>Participants drew on a variety of sources for obtaining information on vaccination. Department of Health/Scottish Executive Health Department circulars and Immunisation against infectious Disease were described as being useful by 79.6%. 46.1% indicated this to be the case for medical journals.</p> <p>97.5% stated their practice had received a copy of the NHS Scotland 'MMR discussion pack'. It was described as 'very useful' or 'moderately useful' by 66% of primary care physicians.</p> <p><i>"Following the BSE debacle, I can understand why the citizens of this country do not believe what the government, NHS, or government scientists tell them. This is one of the problems inherent with the MMR information pack from the patients' point of view." Male Principle</i></p> <p><i>"The MMR Discussion Pack is viewed cynically by some parents as glossy government hype, and [they] distrust it." Female Principle</i></p> <p>This distrust of government expert groups would also</p>	

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			appear to be shared by some within the medical profession. <i>"The flooding of information onto us, particularly about MMR vaccine, makes me ever more confused. To me, the hard sell on any product/vaccine makes me more wary. If something is truly OK, then one should not need to go OTT to prove it."</i> Male Principle	

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<p><b>(Hilton, Petticrew, &amp; Hunt 2006)</b></p> <p><b>Title:</b> Combined vaccines are like a sudden onslaught to the body's immune system': Parental concerns about vaccine 'overload' and 'immune-vulnerability'</p> <p><b>Year:</b> 2006</p> <p><b>Journal:</b> Vaccine</p> <p><b>Volume:</b></p>	<p><b>What was/were the research questions:</b> To explore parents' concerns about immune overload and examines how parents relate this concept to their own children's health and vaccine decision-making.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> 18 focus groups were conducted between November 2002 and March 2003. Four groups were conducted with parents who were anticipated to have a particular interest in vaccination: two with parents who had autistic children, and two with parents who had an immune-compromised child following chemotherapy. By necessity, some focus groups were with parents from pre-existing groups, some with</p>	<p><b>What population were the sample recruited from:</b> Participants living in Central Scotland between November 2002 and March 2003</p> <p><b>How were they recruited:</b> NR</p> <p><b>How many participants were recruited:</b> The 72 participants were purposively selected from a range of ages, socio-economic circumstances, and family circumstances, including first-time mothers, more experienced mothers, single fathers, and parents with multiple social problems</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b></p>	<p><b>Brief description of method and process of analysis:</b> Each transcript was checked. Data were thematically coded and each transcript was repeatedly re-examined and cross-compared to identify common themes and explore parents' underlying reasoning. Once all the relevant extracts of data pertinent to 'fears about vaccines', 'immune-overload' and 'status of the immune system' had been retrieved and checked a coding frame was developed around which to develop research questions</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> A main concern parents raised about the current Childhood Immunisation Programme was that some children might be prone to 'immune-overload'. Despite these concerns, few parents were able to articulate them in any depth. The main concern parents expressed was that vaccines combining several antigens could potentially overwhelm the child's immature immune system, causing health problems later. Some parents linked this fear to their decisions about immunisation.</p> <p><i>"the worry is putting all three in at one time, into that wee body. Individual ones for me is the way, it makes sense to not bombard it with too much chemicals all at one go"</i> (G5: Anna aged 33, rejected the MMR vaccine for her child, but not the other vaccines).</p>	<p><b>Limitations identified by author:</b> It is important to note that parents often changed their minds, contradicted themselves and spoke with uncertainty and ambivalence on matters of vaccine safety</p> <p>Inconsistencies between parents' views and actions were evident throughout conversations about 'immune-overload', and reflect the fact that many parents are anxious and confused about whether</p> <p><b>Limitations identified by review team:</b> Recruitment not specified</p> <p>No demographic data reported for parents or their children. Therefore, no age specified</p> <p>No comparison made between groups</p>

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<p>24</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> B</p> <p>(Methodology from this pilot study was also used in a study by (Hilton, Petticrew, &amp; Hunt 2007))</p>	<p>people who had passing acquaintance (e.g. children in same play scheme), and some with people who were strangers to each other.</p> <p>All groups were facilitated by the primary investigator, recorded with the respondents' permission and transcribed in full. The topic Guide was kept brief and parents were encouraged to lead much of the discussion. Parents were encouraged to take leaflets and seek explanations from trained professionals.</p> <p>Setting NR</p>	<p>The sample included parents with a range of vaccine decision-making outcomes, including parents who had fully immunised, opted for single vaccines, rejected MMR, and rejected all vaccinations. No further details provided</p>	<p><i>"I don't know . . . I just feel they are putting all these drugs into the kids and at some stage you have to say stop, that's enough, they don't need any more vaccinations . . ."</i> (G2: Joanne aged 37).</p> <p>3 parents who sought single vaccines for their children had done so in order to space out the vaccines and to reduce the perceived risk of overwhelming their children's immune systems.</p> <p><i>"I mean but you think about it, you know, if you were given a shot of caffeine and it was just caffeine with no water in it, you know, that's gonna be far more potent for your body than you know, giving it with water, caffeine with water. You know, so why would you not expect your children to have a bad reaction if they're given something that's so potent?"</i> (G12: Joe aged 36).</p> <p>Reasoning was often inherently illogical in that many of the parents who talked about separating the components of the MMR vaccine had already given their children the combined diphtheria, tetanus and pertussis (DTP) vaccines at 2, 3, and 4 months of age, and seemed quite unconcerned about the combination of these three antigens. This inconsistency was spontaneously mentioned by a small minority of parents and may reflect the fact that many parents are ambivalent or uncertain about the nature of the link between combined vaccines and immune-overload.</p> <p>These parents gave the explanation that DTP is given when a baby is only 2, 3, and 4 months old at a time when parents are overwhelmed with the new task of parenthood and have not had an opportunity to fully consider various arguments about immunisation.</p> <p><i>"I'm sure if the timing of diphtheria, tetanus, whooping cough and Hib was later like MMR, there would be a lot more discussion about it"</i> (G1: Violet aged 36).</p>	<p>Difficult to determine whether all groups expressed an opinion in each of the categories.</p> <p>Sample size and findings not justified by statistical tests</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed studies examining a broader range of populations or settings</p> <p><b>Source of funding:</b> A PhD studentship from the Medical Research Council</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			<p>Another explanation parents gave for their attribution of greater potential for immune damage to MMR than to DTP was that parents understood that Wakefield appeared to be specifically identifying the need for the MMR vaccine to be administered through three separate vaccines.</p> <p>A few parents reasoned that this was because the MMR vaccine contains a weakened version of the live measles, mumps and rubella virus. These parents were unsure of the origins of the DTP vaccine, but suggested they were probably less risky. Across the groups many parents felt that, if given the choice by the NHS, they would follow Wakefield's advice and opt to space the vaccines out and give their children single vaccines rather than the combined MMR vaccine.</p> <p>The most vocal groups to speak critically about vaccination were a group of mothers who had opted not to give the MMR vaccine (Group 13) and another group (Group 14) who had rejected all immunisations fearing that they may be harmful to their child's immune system.</p> <p><i>"Well from what I've heard, combined vaccines are like a sudden onslaught to the body's immune system, normally you would catch it through the mouth and there are so many defences that it goes past before it gets there. But when they inject them, it goes straight into the bloodstream and it doesn't pass all those defences and the body just gets a shock, where did this come from?" (G14: Molly aged 37).</i></p> <p><i>"I don't think they (doctors) know enough about the immune system when they're 2 months old, it's still developing . . ." (G13: Aleena aged 35).</i></p> <p>Both groups represent, unlike many other parents, concerns about the risks associated with vaccines were not confined to the MMR vaccine.</p>	



Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			<p>Parents commonly spoke about ensuring that their children were in good health on the day of immunisation and about how they would not take an ill child for vaccination even if the illness was minor. There were many instances where parents spoke about deciding not to immunise with MMR on the grounds that they believed that their child's immune System was unable to cope with the stress of receiving several antigens at once.</p> <p><i>"If they're not well I just cancel the appointment, cos I don't think it is worth the risk of causing them long-term problems" (G4 Sheila aged 36).</i></p> <p>Within all of the groups parents mentioned that illnesses such as common colds, recurrent ear and chest infections, urinary tract infections, eczema, asthma, and allergies were signs of a child having a more fragile and thus vulnerable immune system. Indeed, some parents cited the unexplained rise in the incidence of childhood asthma and allergies as evidence if possible long-term damage resulting from immune overload. The main concern that parents expressed was that, for children who already appear to have difficulty coping with common infections, the MMR vaccine could overwhelm their already fragile immune system, causing long-term damage. These parents often described their children as being particularly vulnerable or susceptible to damage.</p> <p>3 parents who had opted to pay privately for the single measles, mumps and rubella vaccines did so because of this fear.</p> <p><i>Jenny:</i> " Well, my boy, he has been ill, see from day one he has been ill with everything, everything.</p> <p><i>Facilitator:</i> What kind of things?</p> <p><i>Jenny:</i> Everything. You name it . . . he's had colds, just one after the other, he's got eczema all over him and then just allergies, everything. When he had the meningitis jag, his legs all blew up and he was really ill with it. I went . . . I</p>	

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			<p><i>went to the doctor and they said no, that wasn't to do with meningitis C. (G12: Jenny aged 19)</i></p> <p>There were also a few instances where parents spoke about their child being so 'healthy' that they do not need to have vaccinations.  <i>"I'm really lucky because my two are extremely healthy, you know, look up the dictionary, the word 'healthy' there would be pictures of my two in there . . . I think they are strong and could fight these infections . . ." (G3 Dawn aged 36)</i></p> <p>These ideas were also expressed by other parents who rejected the whole premise that diseases are caused by micro-organisms or who considered that it is not necessarily advantageous to avoid diseases altogether. They believed that a healthy individual may benefit from contracting a disease, thus developing life-long immunity to that disease, and suggested that mass immunisation in the UK has become out-dated. It was common for parents who did not immunise or who chose to immunise with single vaccines to mention that they felt children's immune systems varied greatly, and that some children were better at fighting infections and others more susceptible to contracting infections. Parents with several children spoke about the differences they had noticed between their children.  <i>". . . the second one had lots of colds, he had allergies and eczema, and em, it just seemed to be too much on his wee immune system and I just felt it was too risky, whereas the third one is a much more robust child . . ." ( Group 13: Sue aged 36).</i></p> <p>The fear of long-term damage to the immune system arose spontaneously in all the groups.  <i>". . . by over-immunising children, are we in the West modifying our children's immune system, making them more vulnerable to contracting diseases in the future and</i></p>	

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			<p><i>damaging them in some way?" (G2 Joanne aged 37).</i></p> <p>Many parents feared that MMR could cause long-term damage to the immune system. There were only a few parents who considered that they had a direct experience of such adverse reactions. The exception being some parents with autistic children. Four of the six parents caring for a child with autism attributed their child's autism directly to the MMR vaccine. However, it was more common for parents to speak of their children having had a mild short-term reaction and to offer third-hand accounts of other parents' experiences of adverse reactions. These indirect accounts of adverse reactions ranged from hearing about a child who developed a lump on her leg at the injection site to contracting meningitis and being hospitalised in intensive care following MMR vaccination.</p>	

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<p><b>(Hilton, Hunt, &amp; Petticrew 2007)</b></p> <p><b>Title:</b> MMR: marginalised, misrepresented and rejected? Autism: a focus group study</p> <p><b>Year:</b> 2006</p> <p><b>Journal:</b> Arch Dis Child</p>	<p><b>What was/were the research questions:</b> To explore how the measles, mumps, and rubella (MMR) vaccine controversy impacted on the lives of parents caring for children with autism.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Members from 10 groups agreed to take part. Before commencing group discussions, informed consent was obtained and after completing the</p>	<p><b>What population were the sample recruited from:</b> Parents of children with autism, from various parts of the UK</p> <p><b>How were they recruited:</b> To recruit parents across the UK, internet searches were conducted to identify autism and carer support groups. Fifteen group leaders were contacted via email and sent information sheets to distribute to parent members</p> <p><b>How many participants were recruited:</b></p>	<p><b>Brief description of method and process of analysis:</b> Each transcript was checked. Data were thematically coded and each transcript was repeatedly re-examined and cross-compared to identify common themes and explore parents' underlying reasoning. Particular attention was paid to deviant or contradictory cases.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> A prominent theme of the discussions was that the MMR controversy had contributed to considerable uncertainty among parents about the causes of autism. Some parents blamed themselves for having unwittingly sanctioned an intervention that they now believed, with hindsight, may have contributed to their child's condition. While 10 parents were adamant that the MMR vaccine had not played any role in their child's autism, 28 parents felt it was possible that the vaccines been a contributory factor.</p>	<p><b>Limitations identified by author:</b> Study represents a selected sample of participants and the findings may not be generalisable, a common criticism of qualitative research</p> <p>It is possible that the more vocal parents opted into the groups and this should be borne in mind</p> <p><b>Limitations identified by review team:</b> No demographic data reported for parents or their children.</p>

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<p><b>Volume:</b> 92</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> A</p>	<p>session any travel expenses and childcare costs were reimbursed.</p> <p>Each group discussion began with parents introducing themselves and speaking about when they first suspected something was wrong with their child. All 10 groups were facilitated by the primary investigator and parents were encouraged to direct conversation between themselves with minimal interference from the facilitator. However, there were occasions when the facilitator prompted parents to explain, confirm or justify their position so that their opinions could be examined in greater depth. All groups were recorded with the respondents' permission and transcribed in full.</p> <p>Setting not reported</p>	<p>The sample included 38 parents (34 mothers and four fathers) with 36 sons and four daughters diagnosed with autism (mean age 7 years)</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> The final sample included parents with children with autism under 14 years old (mean age 7 years), whose autism had been diagnosed after the publication of Wakefield's paper<sup>5</sup> and covered a range of severity. We also included parents with a range of different MMR vaccine decision-making outcomes for their children in order to select the most diverse sample</p>	<p>In all groups, parents spoke about the possibility that there may be a sub-group of autistic children who have inherently "weak" or "sensitive" immune systems which are unable to cope with vaccination. It was common, for example, for parents to speak about their autistic children having had recurrent bouts of infection, and having been repeatedly being prescribed antibiotics.</p> <p><i>"... if you look at my son he has all these severe allergies and he reacts to everything and I mean, we have to prepare all his food separately and all the rest of it, and he's so sensitive, and I always say his immune system is wonky... totally off kilter..." (G4)</i></p> <p>Other parents highlighted differences between their children with autism and other children in the family.</p> <p><i>"they're like chalk and cheese, she's a much stronger child, she, she never had a thing where he was just sickly from day one. He's always been a sickly child... he was always covered in spots, he was always on antibiotics, he always had tonsillitis, erm... he's always had bowel problems, em.... He's always had loads and loads of antibiotics. He's got asthma and eczema, erm, so he's always been on creams and lotions and potions and God knows what else. He's got food allergies.... He's very, very sensitive to whatever goes in his body. But as for our daughter she's a much stronger child." (G3)</i></p> <p><i>"... his immune system is shot to pieces.... He, he does seem to be one of these children who follows the, the path for antibiotics and then vaccinations and then autism. When he gets a cough or a cold he seems to have it much, much longer whereas my other son can carry on functioning and going to school. But he just gets really ill... it puts him into hospital.... I actually asked the consultant before he discharged him last time. I said 'you know, he does seem to be poorly a lot of the time, you know and he</i></p>	<p>Therefore, no age specified</p> <p>Settings and population recruitment not specified</p> <p>Sample size and findings not justified by statistical tests Recruitment method not clearly described.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> To explore broader populations and settings</p> <p><b>Source of funding:</b> NR</p>

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			<p><i>does have autism and I think there's a link between his autism and his immune system' and the consultant said 'no, that's absolutely not true, there's no correlation between autism and the immune, his immune system'. He dismissed it – so I said 'well okay' but I just felt that I had to say something.” (G10)</i></p> <p>Some parents believed that they had seen a significant change in their child's health or personality post vaccination.  <i>“It was as if all life faded out of him” (G6).</i></p> <p><i>“after his MMR he was a completely different child, he didn't talk, he wouldn't eat, he refused to eat... .” (G3).</i></p> <p><i>“He was ill. You know, when they're really, really poorly and they've a temperature and they've just got that look of, I'm not here, that's scary as a parent, you're scared. And then when he finally kind of awoke, you know, he had the deadest eyes, it was like all the life had gone from his eyes. It was like before he was like a wee boy, twinkly eyes and after it, it was like the same eyeballs but as if, the glare had been taken out of them or something.” (G1)</i></p> <p>The 10 parents who did not believe that the MMR vaccine had played any role in their child's autism believed autism to be a genetic disorder, and either stated that there was a family history of autism or recalled the early signs of autism in their children pre-vaccination.  <i>“... I know in my, in my own mind now, that my son actually had the autism before the MMR, y'know, because, um, when I look back now, all the signs were there. But it's just, you... I didn't know how to recognise it, I mean with him it was there right from the start. But it's not as easy for other parents to say that. I mean... I've now realised that actually, he's actually had autism from the beginning.... It was there. But, you know, what did I know then?” (G8)</i></p>	

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			<p>Another important theme which arose spontaneously in all the groups was that some parents believed that they had ignored early warning signs that their child was not healthy, and had then sanctioned a vaccine that may have caused autism. This placed a significant burden of guilt upon them. Parents spoke, for example, about “feeling inadequate”, a few talked almost confessionally about having “let their children down” and some felt directly to blame.</p> <p><i>“I blame myself... being his mum, I had to have done something wrong for him to be like that... the majority of people need a cause... everybody needs to know why your child is the way they are. (G3)</i></p> <p><i>“... I feel like just I’ve failed my children so badly by not researching that. I feel as though I’ve bought organic food, I bought organic jars of food, I breastfed for as long as I could, I did everything, you know, I’d detox every f***** surface, nothing would get into them. And then I never questioned what was in the vaccine... and I know, you know everyone always says ‘oh, you know, you can’t blame yourself’, but I do blame myself. And I should blame myself because I should have looked into that, I should have questioned that before I took my child along and got them injected.” (G2)</i></p> <p>Parents often spoke angrily about how the MMR controversy had impacted on their lives. Even parents who stated that their child’s autism was entirely genetic in origin felt affected by the uncertainty about the causes of autism which were heightened by the controversy.</p> <p><i>“... it makes you feel pretty damn rotten. I feel as if at the time I did the best for my boy... I wouldn’t have put my child through anything that I think would harm him. (G1)</i></p> <p>Difficulties in subsequent decision-making and the</p>	

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			<p>role of health professionals. It was common for parents to describe how the controversy had made them anxious about subsequent MMR decision-making.</p> <p>Parents who considered that MMR had played a role in their child's autism were more likely to withhold the second dose MMR, believing it might worsen their child's autism. Although, many parents did decide to let subsequent siblings have the vaccine, it was often delayed until they were happy that their child was showing no sign of autism. However, this decision was described as an "agonizing decision", likened to the game of "Russian roulette". Parents commonly spoke of feeling frustrated and annoyed at health professionals' lack of appreciation of their difficult situation and some felt their concerns were dismissed or ignored by them.</p> <p><i>"I thought... God forbid, I don't want both my children having autism; if I had a choice there's neither of them would. But after what's happened to our son there's no way on God's earth I wanted this to happen to my second one." (G3)</i></p> <p>Later she mentioned that she felt angry when her doctor dismissed her concerns and recommended giving her second child the MMR vaccination; she considered this showed a lack of understanding of how difficult this decision was for her. When parents were encouraged to explain further why they felt angry towards health professionals, the key reason they gave was that parents thought that health visitors and general practitioners tended to underestimate the devastating impact of autism, were dismissive of their concerns about the safety of MMR vaccination and seemed to have an "inflexible approach"</p> <p><i>"... they like to do things a certain way and they have what, to me, appears to be a very prescribed avenue of doing things, and if you don't slot into that, if you can't comply... for instance saying 'no, he's not having his MMR</i></p>	

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			<p><i>and actually I'm thinking about doing this and not what you suggest', my over-riding feeling is that they don't like it. And you, you are, you are at the mercy of their beliefs, really and their ideas...." (G10)</i></p> <p><i>"See at the end of the day – this really f**** me off that people think that brain damage from measles and all that is worse than f***** autism – where do they get that, do you know what I mean? My child is brain damaged. He will never have the life that a normal child his age will have, right? He'll probably never leave home, the chances of him getting married are statistically... you know – off the scale. It's not going to happen. So I'm having him live with me forever as that wee boy who's, you know, and he's grown out of his peers now. They're all going ahead. He won't do that. He's never going to move further than Spiderman. Right, so... and I'm not saying – I mean I've got a very close friend whose kid died, I'm not saying that your child dying is anything less than the most horrific thing that could happen – but I think you have to see autism in the same way, as being a really tragic life-long consequence that affects family, it affects friends, it affects siblings, they want to ignore us but you have to be in their face and say don't ignore us...." (G9)</i></p> <p>Other parents in the same group went on to suggest that parents caring for autistic children need time, support and understanding from health professionals. Indeed, of the parents who had either refused their child with autism the second dose MMR or had refused to take their other children for MMR vaccination, most mentioned that they had experienced unwelcome pressure. This only served to deepen their dismay and added to their general sense of frustration and alienation towards health professionals.</p> <p>However, there were a few instances where parents said</p>	



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			<p>that their health visitor had advised them not to have their autistic child immunised with the second dose MMR.  <i>"unofficially she [health visitor] told me, 'don't do it'. She says, 'don't do it' "</i> (G6).</p> <p>The group responded by suggesting that this is typical of the lack of consistency of care which parents experience, adding to their general sense of uncertainty.</p>	

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<p><b>(Hilton, Petticrew, &amp; Hunt 2007)</b></p> <p><b>Title:</b> Parents' champions vs. vested interest: Who do parents believe about MMR? A qualitative study</p> <p><b>Year:</b> 2007</p> <p><b>Journal:</b> BioMed Central Public Health</p> <p><b>Volume:</b> 7</p>	<p><b>What was/were the research questions:</b> To examine parents' views on the role the media, politicians and health professionals have played in providing credible evidence about MMR safety.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Data were collected through 18 qualitative focus groups studies. A topic guide for the discussions was developed through pilot work. The guide included parents' understanding of the evidence about the safety of the MMR vaccine and their perceptions of the role that the media, politicians, and health professionals have played in the controversy. The discussions lasted between one and two hours and</p>	<p><b>What population were the sample recruited from:</b> Parents living in Central Scotland between November 2002 and March 2003.</p> <p><b>How were they recruited:</b> Precise details are not reported. Purposive sampling was used to obtain a diverse sample of parents in terms of age, socio-economic circumstances, likely views about vaccination, and family circumstances, including first-time mothers, more experienced mothers, single fathers, and parents with multiple social problems. The sample also included parents with a range of vaccine decision-making outcomes, including parents who had fully immunised, opted for single vaccines, rejected MMR, and rejected all vaccinations. Two</p>	<p><b>Brief description of method and process of analysis:</b> Transcripts were checked and imported into NVivo 2.0. Data were thematically coded and, following the principle of the constant comparative method, and rigorous analysis, each transcript was repeatedly re-examined and cross-compared to identify common themes and explore parents' underlying reasoning. Once all the relevant extracts of data had been retrieved and checked we started to develop a coding frame around which to examine parents' concerns and views about MMR safety. Attention was paid to deviant or contradictory cases and to group dynamics using field note observations.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Parents felt that the evidence from the parents who believed that MMR harmed their child could not be discounted:  <i>I just don't think enough research has been done really, one way or the other, to say whether it is completely safe.</i> (Trudie, mother of two girls 8 years and one 7 months, both complete)  <i>I still feel as if there is something underlying, something there, you know these children were they</i> (interrupted) (Mel, mother of boy 4 yrs, complete and girl 15 months, partial)</p>	<p><b>Limitations identified by author:</b> The fact that the MMR debate is continuing to develop and unfold, and parents' views may change in the light of new research, new campaigns and new media coverage.</p> <p><b>Limitations identified by review team:</b> Recruitment method not clearly described.</p> <p>Difficult to determine whether all groups expressed an opinion in each of the categories.</p> <p>No comparisons are made between groups.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed studies in a</p>

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<p><b>Quality</b> (+)</p> <p><b>Applicability score</b> B</p> <p>(Data using the same methodology, focus groups and participants were reported in (Hilton, Petticrew, &amp; Hunt 2006))</p>	<p>were facilitated by one of the authors.</p>	<p>additional groups were conducted with parents who had autistic children and with parents who had an immune-compromised child following chemotherapy.</p> <p><b>How many participants were recruited:</b> 64 mothers (age range 15 to 53 years, mean age 32 years), and eight fathers (age range 31 to 51 years, mean age 39 years).</p> <p>Parents were from an affluent area, first time mothers, second time mothers, low MMR uptake area in deprived area, high uptake area in affluent area, low MMR uptake area in deprived area, high MMR uptake area in deprived area, young single mothers living in deprived area, first-time mothers living in affluent area, single fathers in deprived area, parents with multiple parenting problems in deprived area, single vaccine group (Parents who opted to immunise their child with separate measles, mumps and rubella vaccines), parents who had rejected MMR, parents who had rejected all immunisation, parents of an</p>	<p><i>You know though that these parents weren't just making it up, I don't think, you know.</i> (Violet, mother of girl 2 yrs, partial)  <i>No, I know.</i> (Mel, mother of boy 4 yrs, complete and girl 15 months, partial)  Violet: <i>I think to say there is no evidence that it causes harm, is not comforting, because that just means there has not been the research done on it. You could say that about virtually anything practically.</i> (Violet, mother of girl 2 yrs, partial)  <i>That's true.</i> (Trudie, mother of two girls 8 years and one 7 months, both complete)  (NCT affluent area group)  Other parents were viewed as being more impartial as they were seen to have no "hidden agenda", and their stories were easy to relate to: "... You know where you are with other parents. They don't have any reason to make things up or like any hidden agenda so to speak, so you feel you can believe other parents" (Patsy, mother twin boys 2 yrs both complete/boy 2 months too young from G11 Parents with multiple parenting problems).  Accounts from other parents appeared to carry as much, if not more, weight than either evidence from epidemiological studies or assurances from politicians and public health officials. Parents could understand other parents' concerns and could assess their credibility. This was not the case with research studies, which many participants felt ill equipped to assess for themselves.</p> <p>Some parents (no further details) found it difficult to distance themselves from the debate, and (confirming the importance of other parents as credible sources of evidence) stated that they felt particularly drawn to newspaper stories that involved real life people. For example,  <i>"... I think there's a sense that there's a kinship with other parents that you just don't have with, you know, doctors...</i></p>	<p>variety of populations or settings should be conducted</p> <p><b>Source of funding:</b>  The Medical Research Council (MRC) funded the first author's PhD studentship, as part of which these data were collected. The other two authors are funded by the MRC and the Chief Scientist Office of the Scottish Executive Department of Health.</p>

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		<p>autistic child and parents of an immuno-compromised child.</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><i>And I think as well, you know, that the evidence that scientists use, it's just stuff that just goes in and out your ears. You just can't comprehend it. It's not written for parents, and then when they do write it for parents you just wonder, you know, what their motives are because there are so many big players, so many people with their own interests that it's easier to believe other parents. You want to believe other parents."</i> (Dave, father girl 7 yrs complete and girl 21 months, single from the single vaccine group)</p> <p>Nonetheless parents' views on the role of the media varied widely.</p> <p>Some viewed journalists as scaremongers, whilst others thought of them as valuable information providers. For example, one father considered that: <i>"...the newspapers are trying to let the everyday people know the inside story"</i> (Frank: from a group of parents with multiple parenting problems). However, it was more common for parents to speak negatively about the media's involvement in the MMR debate. One mother stated angrily that: <i>"...the media have a responsibility to stop just taking bits of research and throwing it into the press to alarm us"</i> (Iona mother of a boy 12 yrs, girl 7 yrs, girl 5 yr and /boy 3 yrs, all complete from an Ante-natal group).</p> <p>Parents also felt that health stories, especially those involving children, are of huge interest to the general public and that the media are acutely aware of this fact. A few parents complained that the media presented the evidence in such a way that it was difficult to derive clear messages about the safety of MMR. In particular, they criticized the tendency to place scientific and anecdotal evidence alongside each other, in an attempt to create balance, but in reality this left some parents confused. The high level of media attention paid to the debate also appeared to have influenced parents' assessment of the evidence. It was implied on several occasions that the fact that so much attention had been afforded to MMR was on its own evidence that MMR is unsafe: <i>"...there's no smoke without</i></p>	

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			<p><i>fire</i>" (Margaret, mother boy 2 yrs, partial, Young single mothers group).</p> <p>The general consensus (no further details) among parents was that politicians were untrustworthy in matters of health. Parents recalled the previous government's handling of the BSE crisis in the 1990s when they felt that the public had been misinformed. One particular similarity was mentioned; the role of politicians' own children.</p> <p>The image of John Gummer, a former Minister of Agriculture, feeding his daughter a hamburger in 1990 to show that British beef was safe was mentioned by parents as symbolising the Government's handling of the BSE crisis. Parents drew a parallel with UK Prime Minister Tony Blair refusing to confirm in 2001 whether his baby son Leo had had MMR. This was discussed within many of the groups and parents often debated at length the rights and wrongs of Blair's decision not to disclose this information. For example, one mother considered: <i>"I don't really think it is an issue of the baby's privacy, either he has had it, or not... He should come out and say"</i> (Molly, mother boy 5 yrs and boy 2 yrs, Parents who had rejected all immunisation group). A father agreed: <i>"The fact that he didn't disclose that information has put fear into parents... He may be pushing a programme that he doesn't believe in"</i> (Kenny, father boy 3 yrs other and boy 3 mths, complete, Single fathers group).</p> <p>The pressure to immunise perhaps suggested "nanny-state" politics: <i>"... It's like a metaphor for the way the government treats the public. 'I know what's best for you – have a burger', sort of thing"</i> (Sue, mother, boy 6 yrs, complete, boy 4 yrs, partial and boy 13 mths, complete, Parents who had rejected MMR).</p> <p>Parents were often dismissive of phrases such as 'no proven risk,' and 'minimal risk,' and of official messages that MMR is safe, and appeared to interpret such assurances of vaccine safety as meaning that experts are not aware of</p>	

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			<p>any risk 'at the moment'. For example, one woman said: <i>"throwing blanket statements at you, it's safe, there's no proven risk just doesn't reassure you... it reeks of all the other health scare scandals. Where we were told, there is not a problem, not a problem- oh whoop! There is a problem"</i> (Dawn, mother boy 4 yrs and boy 3 yrs, both partial, Ante-natal group with second time mothers).</p> <p>The general view expressed by parents was that politicians serve their own and their party's interests before that of the public.</p> <p>Parents' views on the role that health professionals were felt to have played were mixed.</p> <p>A dilemma that many parents appeared to face was one of knowing who to trust to give them impartial advice. One mother of a boy with autism asked: <i>"What do you do as a parent? You don't know who to trust. Because these are the people- you're meant to trust your doctor implicitly and yet people are saying well, you know, they're getting paid for having so many people vaccinated and all this, and you start thinking 'well... who's got my wee boy's best interests at heart' "</i> (Lesley, mother of a boy aged 4-7 years, Parents of a child with autism group)</p> <p>Similarly, another mother questioned the extent to which parents can rely on health professionals to give them impartial advice. She said that she felt: <i>"...suspicious of some of them, I just sort of don't know their motives, so you know, that does concern me, because you know is there profit involved in it?"</i> (Helen, mother girl 4 yrs/boy 2 yrs, complete, Low MMR uptake area group). Central to this dilemma seemed to be parents' increased awareness that GPs receive payments for meeting Government immunisation targets. A common theme was that parents did not know to what extent their own GP or health visitor was acting in their child's best interest, as opposed to acting in their role as an advocate of public health policy. As one mother put it: <i>"they are part of the system of dispensing</i></p>	

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			<p><i>it; they're not there to question.</i>" (Sue, mother boy 6 yrs, complete, boy 4 yrs, partial and boy 13 mths, complete, Parents who had rejected MMR).</p> <p>As for health visitors, when they sounded too resolute about the safety of MMR, some parents questioned their motives and knowledge; conversely when they sounded more vague, some parents interpreted this as concern that MMR is unsafe. Several of the parents who had either decided to delay, or opted not to have MMR, spoke of their health visitors applying unwanted pressure and in some cases ostracizing them for not complying with the recommended vaccines. Some of the parents who had opted to have single measles, mumps and rubella vaccines, talked about feeling 'blackballed' from their surgery (Jenny, mother boy 2 yrs, single, Single vaccine group).</p> <p>While parents often spoke of concern about their own doctor's presumed lack of impartiality, one particular doctor at least was seen by some as an important and credible source of information. For some (no further details), Andrew Wakefield was an important whistle-blower and champion of ordinary parents. More importantly he was perceived by some to provide the necessary balance which they felt was often missing from other accounts: <i>"...at least Dr Wakefield has stirred things up and got people asking questions"</i> (Stella, mother, Parents of a child with autism group). Criticism of Wakefield by public health officials appeared counter-productive, and if anything, was taken as evidence of their attempts to suppress the 'truth': <i>"I just think the government lie about everything... and try to discredit the doctors...you know, Wakefield"</i> (Angie, mother, boy 5 yrs and boy 18 mths, both complete, High MMR uptake area group); <i>"...instead of saying 'no, no, not possible', they should take Dr. Wakefield's work seriously"</i> (Dawn, mother boy 4 yrs and boy 3 yrs, both partial, Ante-natal group). For some, Andrew Wakefield represented the voice of reason: <i>"this doctor who has had all these parents coming to him</i></p>	

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			<p><i>has said, you know look, I'm not saying that it is a cause, but there is enough concern to be worried about it"</i> (Joanne, mother boy 5 mths, complete, First time mothers group).</p> <p>Not all parents agreed with this analysis. Some (no further details) implied that Wakefield should shoulder much of the blame for their uncertainty about MMR safety:  <i>"See, really, afore this all came out, that doctor, that doctor should have had their facts perfect, the facts that they should have been right before they came away out with all this. It just seems as if they've blew it all out of proportion and then they retract some of it".</i> (Alan, father, boy 2 yrs, partial, Low MMR uptake area).</p>	

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<p><b>(Lunts &amp; Cowper 2002)</b></p> <p><b>Title:</b> Parents refusing MMR: do GPs and health visitors understand why?</p> <p><b>Year:</b> 2002</p> <p><b>Journal:</b> Community</p>	<p><b>What was/were the research questions:</b> To determine parent's reasons for non-uptake of MMR vaccine in the inner city since the adverse publicity allegedly linking this vaccine</p> <p>To determine how well health visitors and GPs understand individual parent's reasons for declining vaccination</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b></p> <p><b>How were the data collected:</b> Data were obtained from the Community Child Health Information</p>	<p><b>What population were the sample recruited from:</b> General Practices in the Bristol inner City Primary Care group, which comprises nine practices with a total population of approximately 53,000 patients. One single handed practice did not consent to take part</p> <p><b>How were they recruited:</b> Questionnaires and covering letters sent to all parents. No further recruitment details provided</p> <p><b>How many participants were recruited:</b></p>	<p><b>Brief description of method and process of analysis:</b> The questionnaires were analysed by both authors independently. No other details provided</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> 30% cited reasons such as fear of long-term damage to the immune system, too many assaults on their child's 'immature' immune system and fear of an alleged link to autoimmune diseases, cancers and cot death.</p> <p>17 parents (18%) felt that measles, mumps and rubella were not serious diseases in the west. Ten parents reported using complementary medicines although no parent mentioned homeopathic immunisation. No parents gave religious objections.</p> <p>28% of responders gave their primary reason as concern over the alleged link between the MMR vaccine and autism.</p>	<p><b>Limitations identified by author:</b> The immunisation history for responders is different from non-responders. 29% of parents did not respond to the questionnaire, which may under-estimate the figures for attendance</p> <p><b>Limitations identified by review team:</b> No comparison group</p> <p>Demographic details including age, gender, SES and literacy of parents not detailed</p> <p>Sample size was not justified.</p>

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<p>Practitioner</p> <p><b>Volume:</b> 75 (3)</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score:</b> A</p>	<p>System. A covering letter and piloted questionnaire were sent to all parents, with one follow-up letter and telephone call where possible. Health line workers were asked to translate the questionnaires with families who did not speak English. If the parent agreed to take part, their health visitor and GP were asked to fill in the same questionnaire asking the reason why they thought the parent had declined MMR. The health professionals were encouraged to consult their notes.</p>	<p>93 parents completed the questionnaires (131 children were eligible to take part for inclusion)</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> All children resident in the inner city during the study period (June 1999 to August 1999) who had not received their first MMR vaccine since the adverse publicity in February 1998</p>	<p>No-one gave Crohn's disease as a reason In the group of parents who feared a specific acute reaction to the vaccine, many reported a personal experiences, such as their own or an acquaintance's child having a 'reaction' to a previous immunisation. These reactions were usually serious for example, fits or deaths.</p> <p>Only 3 parents gave a medical reason for delaying vaccination; two children had an egg allergy, and a third severe brain damage. The health professionals involved had given no parent a medical contraindication.</p> <p>Reasons for declining the first dose of MMR: 68% of parents gave more than one reason 52% mentioned fear of autism 43% had 'alternative' views on autism 24% had a fear of acute vaccine damage 18% reported they had not got around to bringing the child for their vaccination 17% reported a mistrust of GPs, government, pharmaceutical industry 2% did not believe in any immunisations 3% of children were immunised abroad 4% of children had a medical problem/specific-contraindications</p> <p>Of the responders, 71% of children had completed the full primary immunisation course (50% of non-responders had a complete primary immunisation history). 10% of responders' children had not received any immunisations. 39% of parents reported they were still considering to have the full MMR vaccine despite their concerns.</p> <p>41% of health visitors knew the parents reasons to decline the MMR vaccinations and GPS were aware of the reasons in 15% of cases.</p>	<p>No statistical tests were conducted</p> <p>Only proportions were reported. No statistical tests were conducted to assess or justify the significance of findings or conclusions</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed studies in a variety of populations or settings should be conducted</p> <p><b>Source of funding:</b> Montpelier Health centre research and Development Fund and a royal college of General Practitioners' Registrar Bursary</p>



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<p><b>(McMurray et al. 2004)</b></p> <p><b>Title:</b> Managing controversy through consultation: a qualitative study of communication and trust around MMR vaccination decisions</p> <p><b>Year:</b> 2004</p> <p><b>Journal:</b> BJGP</p> <p><b>Volume:</b> 54</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b> A</p>	<p><b>What was/were the research questions:</b> To explore parents' accounts of decision making relating to the MMR vaccine controversy</p> <p>To identify uptake determinants and education needs</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> All interviews were semi-structured to the extent that the ordering of questions could be changed to reflect the flow of conversation while allowing new issues to be introduced. To reduce the possibility of socially desirable response, interviews were conducted in parents' homes by three non-clinical team members. Pre-study piloting and continuous transcript comparison were used to ensure equivalence in subject topic coverage and questioning approach across the sample</p>	<p><b>What population were the sample recruited from:</b> The research was conducted over 16 months beginning in January 2002 and took place in five general practices</p> <p><b>How were they recruited:</b> Practices sent letters to all parents of children born within 1 year, ending 31 March 1998, explaining the aims, uses and researchers associated with the study. The letters invited parents to contact the team by telephone or freepost should they wish to participate in the research, and were signed by the child's GP</p> <p><b>How many participants were recruited:</b> 69 interviews were conducted with parents, 65 of whom were mothers.</p> <p>The average age of parents participating in the study was 34 years (range = 22–44 years). The mean school leaving age of participating parents was 17 years. Sixty-four per cent of those interviewed were in full- or part-time paid employment. Eighty-seven per cent were</p>	<p><b>Brief description of method and process of analysis:</b> Full transcripts of interviews were analysed using a variation of the well-established 'framework' approach. Sub-samples of transcripts were reviewed by the authors to identify key themes for data coding. Codes were then defined and validated through discussion among the research team. These were then applied to the data using the visual qualitative data processing package QSR Nvivo. Overarching themes and 'one-off' or 'deviant' cases were identified in order to understand the research findings and report them in a meaningful, yet concise, way.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Parents who declined vaccination in whole or part had seen children with autism first-hand through family, friends or work, or believed their own child to be autistic (though not all cases were medically confirmed). These parents perceived that the disabling long-term impact of the disorder was far worse than the mumps, measles or rubella diseases. The diseases were seen as relatively mild, treatable and natural – something that the child would survive and even benefit from: <i>I think there can be positive things about them catching measles, mumps, and rubella. They're not as serious as the government makes out ... If children get measles, mumps, and rubella it helps build up their natural immunity, and that's better than the immunity built up by vaccines.'</i> (Practice E, parent 27e, first dose only.)</p> <p>Conversely, those who agreed to immunise their child were far more likely to have experienced, or observed in relation to immediate family, the negative impact of the measles, mumps or rubella diseases in terms of acute illness or long-term impairment: <i>We'd decided that whatever the risks were of having the vaccination, of possible problems, we still felt it was just</i></p>	<p><b>Limitations identified by author:</b> Details of non-responders were not collected. It is not therefore possible to assess the impact that decisions not to participate may have had on study findings</p> <p><b>Limitations identified by review team:</b> No details on researchers/interviewers</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring a variety of populations or settings should be conducted</p> <p><b>Source of funding:</b> Northern &amp; Yorkshire NHS</p>

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		<p>married or living with a partner, 6% were divorced or separated, and 7% were single. The number vaccinating at both doses was 75%, just above the average of 74% for England</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><i>better for them to have the injections than run the risk of any of the diseases. My husband is deaf in one ear and that happened, they're almost certain, after he had the measles as a child and so he felt it was far more important that they did [get vaccinated] and run a very small risk of autism.'</i> (Practice C, parent 10c, complete vaccinator.)</p> <p><i>'Measles, mumps, and rubella inoculation is very important to me. My husband had a brother who died when he was 1 year of age with measles encephalitis and I think one of the big problems with parents — because I've talked to people quite a lot about it — is that they don't realise how serious measles is and can be as a disease.'</i> (Practice C, parent 12c, complete vaccinator.)</p> <p>For reluctant vaccinators, who agreed to a second dose of MMR vaccine despite strong reservations, their decision was based on assessment of outcome likelihood rather than impact. Two factors encouraged assessments indicating low autism risk. First, their child did not have any problems after the first dose. Second, parents observed no evidence of autistic disorder in their immediate social sphere. This second basis for risk assessment served for some as their primary source of tangible facts:</p> <p><i>'The final thing that clinched it was just [name of partner] and his like, sensible everyday comment, not rooted in medical history that "Well do we know anybody who's had an adverse reaction?" Because that is rooted in fact. Tangible fact that we can both hold on to. It's not a scientific report that we can't understand, it's actual everyday living, and the answer to that was no. And that's why, that was the point that really made me realise we were definitely going to go ahead [and vaccinate].'</i> (Practice C, parent 9c, complete vaccinator.)</p> <p>For almost all parents, assessment of disease impact and risk tended to have their basis in experiential knowledge.</p>	

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			<p>Vaccination decisions were based on day-to-day observation rather than the evidence of science. There were exceptions, however. Where parents, or those known to them, were employed in medical or scientific fields, they acted as informal experts capable of weighing the evidence and informing decision. Even here, though, some parents felt a need to apologise for making a rational rather than emotional response to the controversy that surrounded MMR, with one parent commenting that at some level it 'sounds awful' to be reliant on scientific information, the implication being that as a mother she should just know what is best.</p> <p>Beyond individual experience there were a range of factors that served to confirm, complicate and occasionally alter vaccination decision. The mass media raised concern and initiated information search. Friends and family provided a chance to share feelings and experience. GPs and health visitors provided medical input, and were most frequently cited as the best or most trusted source of information on MMR:</p> <p><i>'The GP was very good. Very good, very clear in her advice. But not dictatorial. She just sort of presented me with the facts and with the information ... I was able then to come away and think, "Yes". I felt at the time that it was the best advice.'</i> (Practice E, parent 29e, complete vaccinator.)</p> <p><i>'I'm very impressed with our GP, I think she's very good and I mostly see her for the children and she's very good with them.'</i> (Practice C, parent 27c, first dose, awaiting second.)</p> <p><i>'Well, you have to put your trust in doctors.'</i> (Practice B, parent 7b, complete vaccinator.)</p> <p>Despite the trust most parents espoused in their local practitioners, few cited them as decision influences.</p>	

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			<p>Although often reluctant to criticise their individual GP or health visitor, parents (particularly non-vaccinators) censured practitioners en masse for being too willing to toe the party line on MMR, being brain-washed by government and inevitably biased in favour of vaccination by the award of target payments:</p> <p><i>'I've never had a problem with doctors not being willing to listen to my viewpoint, but I know that doctors and health professionals have to give the government line, so I am not expecting an unbiased discussion.'</i> (Practice E, parent 1, non-vaccinator.)</p> <p><i>'My problem with the advice coming from the GP is that I know that GP practices are paid a bonus for having so many patients vaccinated, so how can their advice be impartial? They are running a business at the end of the day.'</i> (Practice E, parent 12, non-vaccinator.)</p> <p>Parents were also reluctant to initiate discussion during consultation because of the rushed nature of general practice and the pressure of knowing there were other mothers queuing in the waiting room. This pressure was felt by parents and practitioners alike:</p> <p><i>'You're conscious that there's a waiting room outside of children coming in to have the same injection and ... so you know that there's pressure on, don't you? I suppose you're at the doctor's surgery ... you're [feeling] a bit alien anyway. You just want to be in and out and you don't want to be causing a nuisance.'</i> (Practice E, parent 20e, first dose only.)</p> <p><i>'I'm conscious that the waiting room, the clinic at [name of practice] is a 1 hour drop-in and you have all the world sitting there. The pressure of people will make a difference.'</i> (Practice D, practitioner 3.)</p> <p>Effectiveness of consultation was further diminished where</p>	

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			<p>practitioners were felt to be unwilling to engage in discussion of concerns, or were dismissive, condescending or coercive. Consequently, although local practitioners were identified as the most trusted information source in principle, their actual role in decision support was hampered by questions over partiality and concerns as to acceptability or legitimacy of discussion during consultation.</p> <p>Reliance on everyday knowledge coupled with insufficient contact with primary care providers served to ensure that, for a majority of parents, the decision on whether to vaccinate did not reflect an informed choice. Most parents received no information prior to appointment for second dose vaccination on the rationale, benefits and risks of immunisation or the diseases, and could not recall advice given at first dose 3 years previously. Where NHS leaflets were available, they were perceived as dull and uninformative when compared with the photographs and case histories employed by mass media. Official information was felt to bear little relation to 'real' lives, communicating little about the impact of either immunisation or the diseases. It failed to make the issue of MMR vaccination real in minds of parents and failed to communicate the importance of the issue as compared with other campaigns, such as those run by the National Society for Prevention of Cruelty to Children (NSPCC): <i>'I don't think they're [MMR leaflets] hard-hitting enough. I know it's not nice to see children on telly poorly and what have you, but it's like the ones for NSPCC, they make you want to cry, but they make you understand what's going on and I think that's what needs to be done about MMR. I think a lot more information of how many children have died in the past is what needs to be published, so that people can see that it is working. Otherwise there's going to be a lot of poorly children and a lot of dead, blind and deaf children about. You know, when I was at college we</i></p>	

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			<p><i>was handed some figures of — I think it might have been 1970 or something — of how many had died that year, how many were blind and how many was deaf, compared to 2000. And there was a dramatic difference and it was because of all the immunisation. So I think probably they could do with using that a bit more ... to prove to them [parents] that it [immunisation] is working.'</i> (Practice D, parent 5d, complete vaccinator.)</p> <p>Parents identified a number of factors likely to support informed decision on MMR vaccination. Drop-in sessions and forums at local nurseries or schools, dedicated to answering parental concerns, would offer the chance to discuss health controversies without the time constraints imposed within a practice. There was a need for written information in the days prior to a vaccination appointment, replete with case studies and pictures so that parents could relate to and reflect on available evidence. At the vaccination appointment, practitioners should offer information and seek to elicit information as a matter of course. This point was seen as necessary to overcome a tendency among practitioners (illustrated below) to take presentation at clinic as indication of informed consent, while avoiding discussion of MMR and related issues for fear of the concern that it may cause:</p> <p><i>'... you must be happy to have it done if you've brought your child in, because if you did not want it you wouldn't bring them ... [we] don't want to put doubts in their mind. Because if there is any doubt in a parent's mind they're going to say no ... if you keep going on more maybe you're going to scare them more and they'll say no then.'</i> (Practice D, practitioner 1.)</p> <p>In terms of enhancing trust in any information provided, parents highlighted a need to remove target payments, for direction to other information sources, and for facilitated</p>	

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			<p>access to independent third parties who could be trusted to provide balanced accounts of the controversy and underlying science. As revealed in the interview extract below, parents wanted to be able to square feelings of trust in their local GP with wider concerns over partiality and a desire for independent decision support:</p> <p><i>'... I'm not aware of any independent place where they could go and get independent advice. I don't know whether such a person exists ... I mean, I trust my GP, some people don't trust their GP. I think GPs sometimes are seen to have hidden agendas about getting the immunisation rates up ... they get to a certain target, they get more benefits and things like that. Maybe other parents aren't aware of that and necessarily won't take that on board. But yes, somewhere where I could go and get independent advice and maybe somewhere that, where I could go and sit and talk about whether they should have it [MMR vaccine] at 4 and 5 [years]. Not necessarily my GP, but somebody that, you know, can listen and advise and I can take that information away and then come to an informed decision.'</i> (Practice B, parent 1, first dose only.)</p> <p>Parents suggested that access to such information intermediaries could be incorporated into the nursery or school forums described above. This would provide an opportunity to compare the views of local practitioners and third parties, and offer parents a chance to discuss among themselves how the information provided related to existing attitudes and prevailing controversy. Finally, any information provided in general practice, clinics or more novel settings should seek to relate the risks and benefits of the intervention to the parent's local circumstances and individual child. This last point was essential if educational attempts were to be accepted as valid, meaningful and real.</p>	

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<p><b>(Mixer, Jamrozik, &amp; Newsom 2007)</b></p> <p><b>Title:</b> Ethnicity as a correlate of the uptake of the first dose of mumps, measles and rubella vaccine</p> <p><b>Year:</b> 2006</p> <p><b>Journal:</b> Journal of Epidemiology and Community Health</p> <p><b>Volume:</b> 61</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b> B</p>	<p><b>What was/were the research questions:</b> To investigate whether a relationship exists between ethnicity and uptake of the first dose of mumps, measles and rubella (MMR1) vaccination and to study important factors influencing the parental decision about vaccination.</p> <p>To examine the relationship between socioeconomic status and uptake of the MMR vaccine</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Questionnaires were derived from the Townsend Material Deprivation score. No other details provided.</p> <p><b>How were the data collected:</b> The study was conducted in Brent, North-West London. Uptake of the MMR1 vaccine, according to ethnic origin, was assessed using routine data from the Brent Primary Care Trust database for all children aged between 18 months and 3 years on 1st December 2003. Data was grouped by ethnicity and socioeconomic status according to MMR1 uptake. For the second part of the study, 6 focus group interviews were held, two per ethnic group. For each focus group 15-20 mothers were invited to</p>	<p><b>What population were the sample recruited from:</b> Associations with ethnicity was conducted using routine data obtained from the Brent Primary Care Trust database.</p> <p>Parents of young children from the ethnic groups of interest were identified through pre-existing networks, such as mother and toddler groups.</p> <p><b>How were they recruited:</b> For each focus group 15-20 mothers were invited to participate. Convenience sampling generated 6-10 individuals per focus group. No other details provided</p> <p><b>How many participants were recruited:</b> The uptake of MMR1 vaccine was reported for 6444 in Brent.</p> <p>Focus group discussions were conducted with a total 37 mothers.</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b></p>	<p><b>Brief description of method and process of analysis:</b> Proportions of uptake of MMR1 vaccine in each census category and corresponding 95% CIs were calculated. Chi-squared analysis was used to establish whether there was a relationship between ethnicity and uptake of MMR1 vaccine within the routine data. The interviews were downloaded and transcribed verbatim, and the transcripts were coded to categorise the data into different themes. Individual's responses to questionnaires were compared with patterns emerging from the focus group interviews.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> The highest uptake of MMR1 vaccine was amongst children from Indian backgrounds (87.1%, representing 10% of the data). The Afro-Caribbean group accounts for 6.7% of the data and has a medium level of uptake (74.6%). The lowest uptake, 57.5% is in the white group, representing 9.3% of the data.</p> <p>There was a highly statistical significant relationship between uptake of MMR1 vaccine and ethnicity (<math>p &lt; 0.001</math>).</p> <p>The Asian category had the fewest subjects classified within the most deprived quintile, and the largest proportion of people in the most affluent quintile, and conversely for the Black ethnic category. The relationship between ethnicity and socioeconomic status was highly significant (<math>p &lt; 0.001</math>).</p> <p>There was no significant relationship between uptake of MMR1 vaccine and quintile of Index Material Deprivation quintile (<math>p &gt; 0.3</math>).</p> <p>It was seen that all ethnic groups had significantly higher uptake of MMR vaccine than Whites. African OR 2.68 95%</p>	<p><b>Limitations identified by author:</b> Sample was a convenience sample, with mothers invited to attend by nurses and health visitors in an opportunistic manner. By attending such focus group discussions, only the views of the most motivated and most likely to take up vaccination will be captured.</p> <p>35% of the children in the dataset had no ethnicity assigned. This reflects a problem with data collection and input.</p> <p>'Shielding' from adverse coverage of the MMR vaccine, arising as a result of language barriers and different levels of integration into the British culture, may have contributed to the high level of immunisation within the Asian groups</p> <p>Sample size of the most affluent quintile was likely due to the few subjects within this category</p> <p><b>Limitations identified by review team:</b> Focus groups were not split</p>



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	<p>participate. To ensure comparability across groups, an interview guide was used. The discussions were audiotaped and lasted approximately 30 minutes. Interpreters were used where necessary. Participants completed a questionnaire after the interview, which covered aspects of socioeconomic status.</p>	NR	<p>CI: 2.07-3.35, Afro-Caribbean OR 1.62 95% CI: 1.27-2.06, Asian OR 3.44 95% CI: 2.77-4.27 and Other OR 2.06 95% CI: 1.69-2.52.</p> <p>A clear gradient was seen across the quintiles, showing that uptake of MMR vaccine was greater in higher socioeconomic quintiles. Quintile 1 (least affluent) OR=1.10, 95% CI 0.77 to 1.59, quintile 2 OR=1.14, 95% CI 0.79 to 1.63, quintile 3 OR=1.21, 95% CI 0.79 to 1.86, quintile 4 OR=1.96, 95% CI 1.05 to 3.66 and quintile 5 (most affluent) OR=0.43, 95% CI 0.02 to 7.12. No interaction between socioeconomic quintile and ethnicity was found.</p> <p>Members of the Indian groups followed their cultural tradition of consulting their elders, especially their mother-in-law, for advice about immunisation: <i>"Our elders have seen the diseases in their countries...they push us more towards immunising our children."</i></p> <p>It is widely accepted in this group that immunisation is beneficial, possibly influencing their uptake, which is very high. The Asian mothers were also more likely to consult their general practitioner for advice and were most trusting of such advice. <i>"The health visitor or the doctor will always say something which is beneficial to us so we accept the advice."</i></p> <p>Afro-Caribbean and white mothers were more likely to question the pro-MMR vaccination advice given by healthcare professionals, which is consistent with the lower uptake seen in these groups. <i>"I don't really trust anyone anymore to be honest! Even the health professionals unless I know them personally."</i></p> <p>The general media were an important source of information for all mother's, but were also noted as causing the</p>	<p>according to those that had chosen to immunise and those that had not</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> NR</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			mother's initial concerns about the safety of the MMR vaccination.	

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<p><b>(Mullaney et al. 2002)</b></p> <p><b>Title:</b> In the context of controversy over safety of MMR and an outbreak of measles, what parental factors are associated with uptake of MMR?</p> <p><b>Year:</b> 2002</p> <p><b>Journal:</b> Unpublished</p> <p><b>Volume:</b></p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score</b></p>	<p><b>What was/were the research questions:</b> To determine which parental factors influenced uptake of MMR vaccine in the context of controversy over safety of MMR and a local outbreak of measles.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> An anonymous postal questionnaire was sent on 25<sup>th</sup> July 2002, to parents or guardians of all children born in February or March 2001 (n=1757). These children should have been offered MMR immunisation 4 to 5 months prior to the survey (first dose MMR recommended in the UK between 12 and 15 months), and their parents were likely to have been exposed to the intense media coverage of both the MMR vaccine controversy and the local measles outbreak. A reminder questionnaire was sent to non-responders after 2 weeks. The survey included questions on attitudes and beliefs used in other</p>	<p><b>What population were the sample recruited from:</b></p> <p><b>How were they recruited:</b> The study population was selected from the child health computer records for South London covering the former health authority area of Lambeth, Southwark and Lewisham.</p> <p><b>How many participants were recruited:</b> Response rate was 633 (38%) of 1757.</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> Parents or guardians of all children born in February or March 2001 (n=1757). These children should have been offered MMR immunisation 4 to 5 months prior to the survey (first dose MMR recommended in the UK between 12 and 15 months)</p>	<p><b>Brief description of method and process of analysis:</b> Data was analysed using SPSS version 14.0, comparing parents who had their children immunised (self reported), with those who had not. Data from the child health information system allowed comparison of responders with non-responders for age of mother, sex of child and documented completion of primary immunisations and MMR1. The 2000 Index of multiple deprivation [31] for ward of residence was also used to compare responders and non-responders.</p> <p>Responders were divided into (self-reported) immunisers and non-immunisers and the two groups were compared with respect to categorical variables using Chi squared and Kendall's tau tests for trend; and with respect to continuous variables using the T test. Binary logistic regression was used to test for independent associations of socio-demographic variables.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <b>Attitudes and beliefs</b> Immunisers were more likely to believe that the number of immunisations children have is about right; that they could always get answers to questions on immunisations from health care professionals; and that if they had another child they would have them fully immunised. They were more likely to disagree that if children are given a good diet they do not need any immunisations and that a child's natural immune system is weakened by immunisation.</p> <p>Immunisers were more likely to believe that catching the</p>	<p><b>Limitations identified by author:</b> Responders differed from non-responders in terms of age and completeness of immunisations, suggesting that responders were perhaps more interested in health or immunisation issues. The study design may have had implications for observations in that it may have excluded more transient residents as well as non-English speakers. Six percent of parents whose children had not had MMR answered that they had a preference for MMR over single vaccines. This group could possibly have gone on to have MMR. This result suggests that the survey may have been carried out too early to reflect the final decisions of parents on this issue.</p> <p><b>Limitations identified by review team:</b> As per author limitations</p> <p>Low response rate</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
B	studies on immunisation. Additional questions were developed to address themes resulting from a series of qualitative interviews with parents undertaken as a preliminary to this study.		<p>disease was likely, if not immunised and that the diseases were more serious. They were more likely to believe that immunisation was effective in preventing measles and that immunisation was safe. Among immunisers, only 31% thought measles immunisation was safe, compared to 6% of non-immunisers. The percentage that believed it was slightly unsafe was similar in the two groups (53% v. 52%). Three percent of immunisers and 26% of non-immunisers believed measles immunisation to be 'very unsafe'.</p> <p>In total 37% (227 respondents) wrote 'autism' when asked to list what they believed to be the side effects of MMR. 23% (143) mentioned bowel disease (reference to bowel disease or problems, Crohn's disease, irritable bowel syndrome) and 7% (42) brain damage (reference to brain damage, delayed development, epilepsy, difficulty in learning, language or speech). 41% (257) of respondents mentioned one of the three categories of condition. None of these conditions was mentioned in the wording of this question or anywhere in the questionnaire or information sheet. Other side effects listed by respondents which included fever, crying etc were not counted, the authors do not elaborate on this further. There was a significant association between MMR uptake and mention of any of these conditions, with 19% of immunisers mentioning autism, compared to 67% of non-immunisers. 12% of immunisers mentioned bowel disease compared to 43% of non-immunisers.</p> <p>Immunisers were significantly more likely to have higher levels of trust in all sources of information (government ministers, GPs, practice nurses, health visitors, hospital doctors, vaccine manufacturers and scientific experts), to tell the truth about MMR. Non immunisers were particularly likely to express 'no trust at all' compared to immunisers in government ministers (40% v 17%) and vaccine manufacturers (44% v 20%) but expressed less trust in all</p>	<p><b>Evidence gaps and/or recommendations for future research:</b> Well designed studies in a variety of populations or settings should be conducted</p> <p><b>Source of funding:</b> NR</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			<p>sources of information.</p> <p>Overall, 53% (323) of responders said they had enough information to choose whether to have their child immunised with MMR with immunisers more likely to report enough information (62% v. 39%, <math>p &lt; 0.01</math>).</p> <p>Parents were given four options from which to choose a reason why their child had not had MMR. They were asked to write any other reasons in free text. Of the 122 who chose one of the four options 67% (82) said they had not received an appointment; 21% (26) parents reported that the child was unwell on the day of the appointment; 3% (4) said a health professional had advised against it.</p> <p>If single measles vaccine was available in addition to MMR, 43% of responders said they would choose single vaccines, 19% said they would choose MMR, and 24% would be happy to use either. While 9% answered 'don't know' to this question, only 2% said they would not vaccinate at all. 28% of those responders whose child had been given MMR said they would prefer single vaccines.</p> <p>Respondents were given the opportunity to give additional reasons (in free text) for not having their child immunised with MMR. A total of 65 (10% of respondents, 29% of non-immunisers) stated that they were having single vaccines done privately. Only statements indicating definite intent, or that they had already started a course of single vaccines, were counted in this number. Parents who wrote that they were 'considering' or had 'thought about' single vaccines were not included.</p>	

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<b>(Pareek &amp; Pattison 2000)</b>	<b>What was/were the research questions:</b> To investigate the factors that	<b>What population were the sample recruited from:</b> Eight general practices agreed	<b>Brief description of method and process of analysis:</b> Responses were given on five-point Likert-type scales. Linear regression was used as the statistical analysis test.	<b>Limitations identified by author:</b> None reported

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<p><b>Title:</b> The two-dose measles, mumps and rubella (MMR) immunisation schedule: factors affecting maternal</p> <p><b>Year:</b> 2000</p> <p><b>Journal:</b> British Journal of General Practice</p> <p><b>Volume:</b> 50</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> A</p>	<p>influence the intentions of mothers to vaccinate</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> A survey was conducted using a framework of the 'Theory of Planned Behaviour'</p> <p><b>How were the data collected:</b> Mothers were sent a 48-item questionnaire, covering letters from the investigators and the child's general practitioner, and a reply-paid envelope in which to return the questionnaire. Two mailings of the questionnaire were sent. No further details provided</p> <p>SES status reported by authors, not to differ from national survey data from that area</p>	<p>to take part and gave written consent for Birmingham health Authority to release confidential information for all children aged between 5 and 12 months (prior to the first MMR vaccine) and between 21 and 35 months (prior to the second MMR vaccine)</p> <p><b>How were they recruited:</b> Mother who had children in the 5-12 month cohort (group 1) or the 21-35 month cohort (group 2) were randomly selected from the Health Authority. Randomisation was not specified</p> <p><b>How many participants were recruited:</b> 150 mothers of children aged 5-12 months and 150 mothers of children aged 21-35 months were randomly selected to participate from group 1 and group 2.</p> <p>Responses were received from 173 out of 295 mothers (response rate = 59%). Authors report no differences were found between responders and non-responders.</p> <p><b>Were there specific</b></p>	<p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> 89.5% of Group 1 children and 94.3% of children in Group 2 had received their complete course of primary vaccines by the age of six months. Of the Group 2 children, 91.5% had received their first MMR vaccine by 21 months. Mothers who did not have their child vaccinated cited 'fear of vaccine' as their reason.</p> <p>62.4% and 69.9% of mothers knew when their child had their first and second MMR vaccine, respectively, and there were no difference between groups.</p> <p>48.6% of mother said the vaccine did cause side-effects and a further 32.9% were unsure, with no significant differences between groups</p> <p>44.2% of mothers in Group 1 and 58.5% in Group 2 cited general malaise as the side-effect caused by the MMR vaccine 29.8% of mothers stated that the vaccine caused autism and 13.1% said it caused Crohn's disease, in response to an open-ended question Group 2 mothers significantly were more likely to say that the vaccine causes serious neurological effects (p=0.016). 41.1% of mothers sad there are valid contraindications to the MMR vaccine, most commonly citing 'child unwell at time of vaccination' and 27.7% cited 'adverse reactions to previous vaccines for family members'</p> <p>Mothers consulted a wide variety of sources to obtain general information about the MMR vaccine, including health professionals, friends, family and the media. In both groups, the commonest source of general information was the health visitor (77.9% in Group 1 and 76.7% in Group 2). Mothers predominately acquired their information about the</p>	<p><b>Limitations identified by review team:</b> Authors reported that 85.6% of the responders described their ethnic background as white, which is higher than the overall proportion in Birmingham</p> <p>Details on the method and process of analysis were lacking</p> <p>Authors interpretations of questionnaires may cause bias. The number of 'coders' was not reported</p> <p>No power calculation reported to justify sample size</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies examining broader populations and settings should be conducted</p> <p><b>Source of funding:</b> Supported by a studentship from the Yorke Williams Bequest</p>

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		<p><b>exclusion criteria:</b> Twins were excluded and mothers who had children in both the 5-12 month old and 21-35 month old were excluded from the 21-35 month cohort</p> <p><b>Were there specific inclusion criteria:</b> Mother who had children in the 5-12 month cohort (group 1) or the 21-35 month cohort (group 2). No further details provided</p>	<p>side effects of the MMR vaccine from various sections of the media rather than from health professionals, with television the most commonly cited source of information about side-effects (31.4% in Group 1 and 37.9% in Group 2).</p> <p>Mothers in both groups valued the opinion of their GP most in making a decision to immunise. Group 2 mothers were significantly more likely than Group 1 mothers to value their own opinion as very important (p=0.011)</p> <p>Mothers generally felt that the vaccine preventable diseases were serious, with measles perceived to be the most serious disease (50.9% said it was 'very serious') and mumps the least serious (36.1% felt it was 'very serious'). 76.5% of mothers felt that the MMR vaccine was 'very safe' or 'safe', but the two groups differed in their perception of it's safety, with 8.1% of Group 1 mothers agreeing that the MMR vaccine was 'very unsafe' or 'unsafe' in comparison with 25.3% of Group 2 mothers (p=0.004)</p> <p>9.3% of group 1 mothers and 24.1% of Group 2 mothers said the vaccine 'rarely protected' (p=0.014). Group 2 mothers also had significantly more negative 'vaccine outcome beliefs' (i.e. they were less likely to believe that the MMR vaccine protected their child from disease and/or that this was an important outcome), compared to Group 1 (p&lt;0.0001). Proportions not reported</p> <p>Group 2 mothers had significantly lower intentions to take their children for the second MMR vaccine than Group 1 mothers had to take their child for the first MMR vaccine (p&lt;0.0001). In Group 1 mothers the sole predictor of intention was 'vaccine outcome beliefs', which accounted for 77.1% of the variance in the intention score. In Group 2, 'vaccine outcome beliefs', attitude to MMR vaccine, and prior MMR status together accounted for 93% of the variance in intention. No significance levels reported</p>	

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<p><b>(Petrovic et al. 2003)</b></p> <p><b>Title:</b> Parent's attitudes towards the second dose of measles, mumps and rubella vaccine: a case-control study</p> <p><b>Year:</b> 2003</p> <p><b>Journal:</b> Communicable Disease and public health</p> <p><b>Volume:</b> 6 (4)</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> B</p>	<p><b>What was/were the research questions:</b> To identify factors associated with non-uptake of the second dose if the vaccine in children resident in North Wales</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Data were provided by Health Solutions Wales. Subjects were mailed a short pre-piloted self-administered questionnaire, together with a covering letter between the 14<sup>th</sup> and 15<sup>th</sup> May 1998. Up to two repeated mailings were sent to non-responders. The postal questionnaires were used to compare knowledge, attitudes, and practice of non-acceptors (cases) and acceptors (controls)</p>	<p><b>What population were the sample recruited from:</b> The sampling frame included children born between 1<sup>st</sup> October and 31<sup>st</sup> December 1993. Subjects selected from parents of children scheduled for the second dose between October and December 1997</p> <p><b>How were they recruited:</b> Cases and controls were selected by simple random sampling of the children from the same birth cohort.</p> <p><b>How many participants were recruited:</b> Parents of 101 children were eligible to be cases, and 200 controls.</p> <p>Authors reported the sample sizes provided greater than 80% power to detect a difference of 20% or more. The response rate was 74.3% for non-acceptors and 77.5% for acceptors</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b></p>	<p><b>Brief description of method and process of analysis:</b> Validation was carried out on 19 subjects whose answers suggested a possibility of misclassification. Data were presented in descriptive terms with calculation of p values, 95% CI and ORs where appropriate.</p> <p>21 non acceptors and 3 acceptors were excluded from further analysis, due to incomplete data or late returned questionnaires. Analysis based on 54 non-acceptors and 152 acceptors</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Non-acceptors (66.7%) were more likely than acceptors (36.3%) to report having 'a lot' or 'some' influence from newspapers/television (OR 3.52, 95% CI: 1.57-7.86)</p> <p>The view that measles is 'very serious' was expressed by 60.4% (95% CI: 46.0-73.5) of non-acceptors and 53% (95% CI: 44.7-61.1) of acceptors. No respondents stated that measles was 'not all serious'.</p> <p>Non-acceptors were significantly more likely to have a worry about the MMR vaccine than acceptors (OR 2.19, 95% CI: 1.09-4.39)</p> <p>Of the non-acceptors, 92.1% (95% CI: 82.2-97.5) reported that they would accept at least one dose of MMR vaccine for another child. 39.2% (95% CI: 25.8-53.9) reported they would accept both doses</p> <p>The most common reasons given for non-acceptance were that the child had already had one dose of the MMR vaccine, which was thought to be enough (75.8%), and that parents were worried about the side effects of the vaccine (63.6%). Negative influence by a health visitor was reported by 9.7%.</p>	<p><b>Limitations identified by author:</b> No matching other than birth cohort, residence in North Wales and completion of primary immunisations at the time of data extraction was done.</p> <p>Recall bias was a potential problem but should have been reduced by using a three-month birth cohort that would have been offered the second dose in the year prior to sending the questionnaires</p> <p><b>Limitations identified by review team:</b> ORs not reported for all findings.</p> <p>No details provided for analysis of potential differences between responders and non-responders</p> <p>Demographic details including age, gender, SES and literacy of parents not detailed</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies examining broader populations and settings</p>

		<p>All parent, whom following birth, had consented to their child having all the vaccines in the childhood immunisation programme, and that the child had received all vaccines in the primary schedule, as well as the pre-school DT/polio boosters.</p> <p>A case (non-acceptor) was defined as the parent or guardian of a child who had received all vaccines except the second dose of MMR. A control (acceptor) was the parent of guardian of a child who had received all vaccines including the second of the MMR vaccine.</p>	<p>There was a strong association between the two main reasons given for non-acceptance of the second MMR vaccine dose (<math>p &lt; 0.001</math>). Of the 21 parents who expressed side effects as a reason, 17 (81% also gave 'my child has already had one dose of MMR, and I think one dose is enough' as a reason for non-acceptance.</p>	<p><b>Source of funding:</b> The study was performed as part of the routine service work of the North Wales Health Authority's department of public health</p>
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<p><b>Poltorak et al. 2005</b></p> <p><b>Title:</b> MMR talk and vaccination choices: An ethnographic study in Brighton</p> <p><b>Year:</b> 2005</p> <p><b>Journal:</b></p>	<p><b>What was/were the research questions:</b> To explore how wider personal and social issues shape parents' immunisation actions.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Ethnography</p> <p><b>How were the data collected:</b> The authors interviewed health professionals together and made initial contacts with five different carer and toddler groups during March–</p>	<p><b>What population were the sample recruited from:</b> Two areas of Brighton and Hove, Whitehawk and Fiveways/Preston Park.</p> <p>The last census (2001) reveals a relatively youthful and mobile population, of the total population of 247,817, 42% are aged 20–44 (compared to the England and Wales average of 35%) and 18% are defined as migrants. The 60% of adults defined as employed work predominantly in public</p>	<p><b>Brief description of method and process of analysis:</b> Initial interviews suggested that a biographical format would elicit the required basic information, thus interviews sought a processual appreciation of vaccination decisions through starting with the question, 'When do you remember first thinking about MMR for your child?', and then seeking elucidation and expansion on the specifics that parents raised. In giving their own explanations, mothers also theorised other mothers' decisions in relation to their social worlds. One of the authors then transcribed and summarised all the in-depth interviews into 23 parent profiles with associated key narrative themes and vaccination biographies. All researchers examined these and discussed their significance in two meetings. These themes were then expanded, adapted and grouped in a working paper that was shared, discussed and modified in</p>	<p><b>Limitations identified by author:</b> Exploration into gender dynamics around MMR choice or social categories such as class, gender and education on MMR choice.</p> <p><b>Limitations identified by review team:</b> As identified by the author.</p> <p>Limited information on the views of health professionals.</p> <p><b>Evidence gaps and/or</b></p>



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<p>Social Science and Medicine</p> <p><b>Volume:</b> 61</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> A</p>	<p>May 2003. These groups ranged from those organised by health professionals and community workers, to informal drop-in sessions co-ordinated by the National Childbirth Trust and a social-services supported community centre, to an organised physical activity/music class. Three were used as the base for group discussions (one led by ML, three by MP) convened amongst four to seven mothers who happened to be present on a particular day; no advance attempt was made to unite those sharing any particular view. Group discussions and in-depth interviews were transcribed in full.</p> <p>Short informal group discussions and participant observation included 4–7 mothers attending 3 of the parent-toddler groups on a given day. 48 conversations were recorded, and 23 were developed into in-depth narrative interviews lasting 1–2 hours. Interviews were transcribed and then summarised into 23 parent profiles with associated key themes and vaccination biographies. Themes were expanded and grouped in a working paper that was modified in consultation with a stakeholder advisory panel. GPs, nurses, and health visitors were interviewed together; 3 health visitors were also work-shadowed.</p>	<p>services (26.5%), financial and business services (23%) and retail (14.4%). The local unemployment rate, 3.6%, is a fraction higher than the national average of 3.4%. Two areas of the city, Whitehawk and Fiveways/Preston Park, were deliberately identified as apparently conforming to the stereotypes of 'deprived' and 'middle class' areas highlighted by some public debate over MMR. The 'Overall index of Multiple Deprivation for 2000' ranks the 1998 administrative wards of Marine (covering Whitehawk) and Preston (covering Fiveways/Preston Park) at 439 and 5164, respectively (of 8414 wards in England; 1 being the most deprived). 'Deprived' Whitehawk covers some rather better-off pockets, however, while 'middle class' Fiveways/Preston Park is not without poverty.</p> <p><b>How were they recruited:</b> The city was chosen for sharp decline in MMR coverage, locality to researchers and interest shown by public health professionals.</p>	<p>consultation with the study's stakeholder advisory panel.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <p><b>Personal histories</b> Many (no further details) described drawing on the history of vaccination decisions and disease experiences in their own and other families. A few had been brought up in families with a longstanding rejection of all vaccination, while in others, vaccination was very much valued. Most, however, had a family history in which vaccination played a minor role. Several parents were familiar with children who had been brought up unvaccinated with, they perceived, little ill effect: <i>My mum thinks that in the past when there was no midwives and health visitors they just got on with it. Mum thought she didn't think it would work for us, she thought if we were ill we would be ill. (Mother).</i></p> <p>Experiences of oneself or others catching childhood diseases with few serious effects, or less frequently, with complications, also feed into people's perspectives on vaccination. Some parents (no further details) in deliberating MMR actively pursued such histories, questioning relatives or friends to discover whether they themselves were vaccinated for the diseases concerned.</p> <p>Mothers also drew on other familial, professional, personal, philosophical and travel experiences. Previous medical experiences or contact with medical professionals influenced trust in or suspicion of biomedical recommendations to vaccinate. Among the mothers were several health professionals; they did not all accept vaccination unquestioningly, but also narrated their increased awareness of iatrogenic disorders, medical mistakes and possibilities of error. Equally, the narratives show how longstanding sickness or inherited conditions led</p>	<p><b>recommendations for future research:</b> Exploration into gender dynamics around MMR choice or social categories such as class, gender and education on MMR choice.</p> <p><b>Source of funding:</b> Economic and Social Research Council (ESRC) Science in Society Research Programme</p>

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		<p>In collaboration with local public health specialists a focal GP practice in each study area that served a significant proportion of residents was identified, had more than one GP and welcomed the research. Neither practice either self-identifies or was known in local health care circles as having any particular 'take' on MMR.</p> <p>Mothers attending one of three different toddler groups during March-May 2003, the sample of mothers was opportunistic and was not intended to be statistically representative. No attempt was made to unite mothers with a particular view.</p> <p><b>How many participants were recruited:</b> 23 mothers who had children &lt;3 years of age and attended any of 5 different parent-toddler groups; 8 general practitioners (GPs) and 3 practice nurses; and 6 health visitors.</p> <p><b>Were there specific exclusion criteria:</b> NR</p>	<p>some parents to gain more insight into the practicalities, politics and pitfalls of healthcare than the theories supporting medical treatment.</p> <p>Some mothers claimed political or philosophical attitudes that make them suspicious of or offended by what they experience as heavy-handed or patronising denials of their ability to choose for themselves. Some are suspicious of drug companies' involvement in vaccination programmes. Inversely others come from families with a history of compliance born of economic need that makes them ill prepared either to research or to feel confident to criticise. Several parents acknowledged particular personality quirks or phobias that made them apprehensive of biomedical intervention, however mild.</p> <p>Only four of the 23 mothers expressed total confidence in the MMR. All four also distinguished themselves from other mothers on the basis of their personal histories.</p> <p>The narratives suggested several connections between mothers' engagement with birth and vaccination. Decisions around pregnancy and birth, for the first child at least, first make parental choice a major issue. Birth is a key point when parents balance choice and trust in a medical institutional setting, experiences of their own autonomy in relation to medical authority, and wider social desires. The extent of active choice, and the kind of birth that a mother chooses emerged as a marker of the extent of her research and experience of dealing with often sceptical health professionals.</p> <p>Several mothers (no further details) who later rejected MMR had sought 'natural' or active birth. While in such cases, both birth and MMR decision might have been shaped by a prior worldview emphasising a particular notion of 'the natural', the narratives also suggest that birth experiences</p>	

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		<p><b>Were there specific inclusion criteria:</b> Having a child under three and willingness to be interviewed, either at the time or by later arrangement at home of another mutually agreed location.</p> <p>Mothers were contacted at the five different carer/toddler groups or introduced by one of six different health professionals. Only two mothers were recommended on the basis of their vaccination decision (one by a doctor as an interesting case of non-vaccination; the other by a mother as someone who vaccinated despite having an autistic child). The mothers interviewed had a variety of social, demographic, educational and occupational backgrounds.</p>	<p>can guide thinking about vaccination, whether by reinforcing or undermining a previously held view. In one contrasting example, the previous experience of an interventionist birth undermined a mother's faith in the medical profession and reinforced her belief in 'nature' and natural ways of doing things. Another mother's experience of interventions associated with premature delivery made her feel denied of choice, increasing her sense that the MMR decision should be her choice.</p> <p><i>Didn't have the choice of breastfeeding, she was so early she had to be droplet fed. Eye dropper thing because she didn't suck the bottle properly. So that choice was taken from her basically, didn't really want a caesarean, wanted to just have gas and air, didn't want an epidural, heard horror stories, didn't really have the choice for that, that kind of choice was taken away from me. So in a way it made it easier? (Young single mother).</i></p> <p>Four mothers who invested much time in research around birth and who started thinking about vaccination at least 4 months before birth went on to have single vaccines or not to vaccinate at all.</p> <p>It is the rare mother who has not been drawn into a particular way of discussing MMR along with other issues of concern (sleeping, feeding, behaviour...) in the many groups most mothers participate in with their children, from organised carer/toddler sessions to informal gatherings at home or in the park. Conversations appear to be framed by an informal, egalitarian and friendly ethos which obviates any implicit hierarchy of knowing more than others, by having done more research or by having older children.</p> <p>Parents rarely seek or give advice but rather learn from hearing and sharing experiences and tips, generally valuing forms of information sharing grounded in the unique relationship and responsibility that each has for their child.</p>	

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			<p>The work did not reveal anything resembling peer pressure to vaccinate or not; what did emerge was a sense of taking other parents' concerns seriously.</p> <p><i>Researcher: What information have you had apart from the newspapers?</i></p> <p><i>(Mother A) You probably get more information from talking like this, as a group, if (my friend) comes around we talk about different things, maybe I'll try that with (my daughter), ... you get more of an idea.</i></p> <p><i>(Mother B) You feel that you can ask, you can't actually go to the doctor and say, look I've got a real big problem, life is really hard, I cannot cope, but you can say to your friends 'she's a nightmare, have you got anything I can try'.</i></p> <p><i>(Mother A) Everyone's been through exactly the same.</i> (Focus group in Whitehawk)</p> <p><i>My friend asked me what she should do and I say whatever is right for you. I don't say, oh 'don't do that', I'd tell them how I feel but ' you may have other reasons to feel how you feel' and she did have the MMR done. I didn't say 'oh you stupid' whatever, it was like 'Ok is the baby fine? Good'. You can't put your highly opinions on them, otherwise if they did what you did and they did catch something they could blame you, couldn't they? (Mother of two girls /single vaccines).</i></p> <p>For many mothers (no further details), the wish for a common camaraderie is linked to a way of discussing MMR that rejects any denial of parental right to choose. The powerful association between talking about MMR and fomenting relationship with other mothers means that the failure to question assurances of MMR safety threatens newly established and valued relationships. Identification as a mother makes it difficult not to relate sympathetically to</p>	

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			<p>the accounts of mothers (first-hand, or through social networks, internet or media) who noticed a dramatic change in their children's behaviour after vaccination. In short, to ignore concerns about MMR, one has to distinguish oneself as a mother from other mothers.</p> <p>Several mothers (no further details) suggested, however, that more experience of alternative medicine might encourage rejection of the MMR.</p> <p>Such aspects of MMR talk are common amongst both Whitehawk and Fiveways mothers. In Whitehawk, however, mothers within older Whitehawk families, with strong community relations, contrasted with newly settled mothers whose parenting relations were structured more through their engagement with health and social services. In this vein, four newly settled single mothers expressed how their sense of isolation from peers overwhelmed their ability to make what they regarded as an informed choice for the DTP.</p> <p><i>Had all of the baby jabs done. Because being on my own, as I said my mum wasn't down here and I hadn't established a group of friends down here, I felt really vulnerable. The responsibility of looking after him was extremely overwhelming. (Single mother).</i></p> <p>Vulnerability was a reason for vaccination, or at least for handing over judgement about it to health professionals. Vaccination was seen as a subset of expected personal research into parenting options and advice of all kinds, encompassing health, diet, sleep, behaviour and other issues.</p> <p>Personal research is encouraged by other parents, as well as by health professionals. It involves searching for recommended books, contacting parents' groups for advice, and surfing the internet, balancing the dramatic claims of</p>	

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			<p>individual mothers, the perspectives of anti-vaccination campaigners, serious work on history of science and public health, and relatively inaccessible texts on immunology. The research process is rarely satisfactorily concluded by any vaccination choice, but rather accentuates a sense of doubt; only those mothers who researched to support a previously felt position ended up taking a decision they felt clear about.</p> <p>Most of the GPs (no further details) felt little involvement in most parents' MMR decisions: few consult them, and most of those who do have already made up their minds, seeking support rather than advice. Many mothers confirmed that they did not raise their questions with GPs, seeing them as time-constrained and probably partial in their advice (not least because of their financial gain from meeting vaccination targets) and because of a sense of unequal power relations, invoking worry about appearing ignorant.</p> <p>Health visitors generally appreciate parents' dilemmas, and do not wish to compromise carefully built trust relationships through anything that might be perceived as heavy-handed advocacy to vaccinate. Moreover, vaccination is not the immediate priority for health professionals working with parents who are perceived as deprived, with many related health and social problems. As one professional described her work in Whitehawk,</p> <p><i>I think your role is much more, damage limitation, sometimes they have so many illnesses and so many risk factors, that you take the worst one and try to deal with that.</i> (Female health professional – Whitehawk)</p> <p>Established trust between parents and health professionals did not necessarily affect parents' vaccination decisions. Only in one dramatic intervention of a GP saving the life of a child with meningitis was a previous familial rejection of</p>	

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			<p>vaccination reversed.</p> <p>Some mothers actively choose between health professionals, seeking out those who will support their particular perspective on vaccination. For some, having a supportive health professional lends momentum to the process of research and of acquiring confidence in one's judgement. In contrast, other parents act passively. Some feel patronised or intimidated in engagement with health professionals, and thus do not ask questions; this can be read, mistakenly, as passive acceptance (compliance). <i>I think the majority of Whitehawk are not having to make those decisions, because they are allowing us to make those decisions, because they are quite happy to hand that over, that responsibility over, they don't want to have to think about that, hopefully because they trust what you are doing or don't have the space to put thought into it, I don't know. (GP)</i></p> <p>However, the same GP, in relating one particular case, appeared highly aware of how such institutional relations influence their encounters. For example, <i>She won't even come back and talk to me. She is not as educated, she finds it really threatening to talk about the details, and that [information] pack is very technical, which is one of the reasons that I wanted to see her again. (GP)</i> Observation by social services may also make engagement with health professionals problematic, if mothers feel that they are being judged for their particular vaccination decision.</p> <p>In our interviews, few parents mentioned the controversies over BSE and genetically modified foods in the UK as influencing their lack of trust over MMR, and a few actively denied any link:</p> <p><i>Have you been worried by any of the scandals about food</i></p>	

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			<p><i>that were reported in the papers? No, no (affirmatively), BSE! I was told that I was a mad cow anyway. It doesn't bother me. (Mother. One child vaccinated with MMR). Trust in government appeared less relevant than mothers' personal confidence in their decision process. Thus, some mothers' celebration of informed choice appears predicated on a form of personal responsibility that implicitly takes governmental fallibility into account, reflecting an established lack of trust. This acceptance of personal responsibility is manifest in the recurring statement</i></p> <p><i>'I couldn't forgive myself if [my child became autistic; my child developed complications from measles]' explaining both non-vaccination and vaccination.</i></p> <p>Some mothers certainly seem to be less anxious and to express less responsibility for their children while attributing public institutions with greater knowledge and right to intervene.</p> <p>Most (no further details) of those concerned about the MMR suggested that three vaccines were too many for the immune system to cope with and could 'knock back' a child. Others invoked ideas that can be broadly summarised as (1) increased susceptibility reflected by the presence of some disorder within the child or family, (2) the value of natural immunity and of supporting it with nutrition, and (3) the particularity of individual immunity, sometimes linked to hereditary factors. Three mothers strongly argued that conditions such as eczema, asthma, allergies and learning disorders—of parent or child—predispose a child to suffer serious effects from the MMR vaccine.</p> <p>This field of reflection and discussion leads some parents to regard the MMR as appropriate for most people, but not for their own child because of a particular weakness or susceptibility. Fear of an unknown weakness may be</p>	



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			<p>reason enough to avoid the MMR. The possibility of risk—in other words, uncertainty—shapes rejection of vaccination.</p> <p>Several mothers who chose to avoid or postpone vaccination described the effects of measles infection in similarly particularistic terms. They saw their child's vulnerability to serious effects as depending on the strength of their immunity as acquired through nutrition and appropriate nurturing. They backed up such thinking with the idea of valuable, acquired natural immunity, and by appreciation of historical or geographic associations between measles morbidity and nutrition.</p> <p>Many mothers express the particularity of each child through their different personalities and the history of their weaknesses and strengths, and conceptualise each person's immune system as particular. Parent-child links and responsibility are affirmed through ideas that parental illness susceptibilities can be passed on to children. Even the tuberculosis suffered by a child's grandparents may be conceptualised as manifest in their constitution. This sense of particularity is another reason why many mothers see their own vaccination decisions as not relevant to other parents.</p> <p>Many (no further details) of the parents heard stories of 'vaccine damaged' children, talked conspiracy, and expressed belief in many of the DH's list of 'MMR myths', yet still went on to vaccinate. While this could be attributed to 'trust', several mothers emphasised lack of confidence or lack of knowledge as explaining decisions to vaccinate.</p> <p><i>I don't feel we have enough information. I sway one way then the other. Single vaccinations concern me too. Confusion really. When I do do it, and I probably will, it will be closing my eyes, running and jumping. (Mother of three-month-old baby).</i></p>	

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			<p><i>I'd have to be a lot more knowledgeable not to have it.</i> (Mother of 6-month-old child/unsure about MMR).</p> <p><i>I'm not confident enough to go down the non-vaccination route.</i> (Mother of 6-month year old child/ intends to have single vaccines)</p> <p>Some mothers who mentioned contraindications in their narratives postponed vaccination until they felt their child's constitution had strengthened, or a period of particular susceptibility had passed. A greater susceptibility to measles may also be the final impetus to undecided mothers.</p> <p>Even amongst parents with longstanding, research-based, informed concerns in favour of vaccination, the final decision to vaccinate may be postponed for logistical or familial reasons. Several mothers only consented to vaccination once the child's father finally agreed to take the children, claiming that they could not bear to see their children suffer. However, they were perhaps implying the need for combined parental responsibility on the issue.</p> <p>Thus, a decision to vaccinate does not necessarily reflect resolution or acceptance of the safety of the MMR. It may on occasion be a simple realisation of being unable to afford single vaccines, or a spontaneous or professionally encouraged decision on the spur of the moment, when in the surgery for other business. The narratives suggest that one can still vaccinate voicing both exaggerated risks of autism, and serious dangers from measles. The difficulty in deciding and dealing with the wide variety of social and economic factors, pressures, uncertainties and implications for parental responsibility are captured well in the narrative of a 21-yr-old single mother from Whitehawk who has postponed the MMR vaccination for about 6 months.</p>	

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			<p><i>Do you ever get to the point when you can decide? She's going to have it. I've been told. Her dad's told me he wants her to have it and it's a strong thing that he wants her to have it, so he's going to take her to have it, and I'm ok with that. I don't want to take her to have it, really.</i></p> <p><i>Do you feel because it's his decision because he took the responsibility, takes the pressure off you a bit? A bit yeah. I do feel like it's a lot of pressure and I do think she should have it, really, realistically. I just cannot pay for single ones. If I could afford it, I would have single ones. Why should your child's development maybe suffer, we don't know yet, because you can't afford it... That's not really fair is it?</i></p> <p><i>How come your partner is so sure that it's right? Well, ...hmm.. she needs to have something done. I'm weighing up the pros and the cons of it, for her to have it, she could become autistic then that's the chance you are going to take. If she doesn't have it, she could get very ill, she could die. Then realistically I'd rather she be autistic. It sounds really silly, maybe, I'd rather take that option, if she's still here with us, and I would still love her, she is still my child, rather than thinking to myself I'm putting her through all that illness, for nothing, you know, when really I could vaccinate against that. It's probably less chance of her becoming autistic than there is of her actually getting ill. Even if she didn't get really poorly she'd still get ill, she'd still get it, she's having it now, (laughing....) I'm not quite sure but she's having it.</i></p> <p>Whatever the choice, the process of learning about MMR continues and plays a role in future vaccination decisions for future children. While non-vaccination or single vaccination requires a continued engagement to affirm the position taken, even parents who opt for MMR continue to</p>	

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			<p>learn and say they remain open despite having taken a decision that is irreversible.</p> <p>You've got to hope and pray that the decision that you made was the right decision, yours and your own. (Mother, one child vaccinated).</p> <p>In the immediate weeks after vaccination, parents may be aware of possible side effects and express relief that nothing serious happened. Even long after vaccination, when reflecting on problematic aspects of their child's development, the unnerving worry remains that the MMR might be responsible. Future children may not be vaccinated with the MMR even if previous children were.</p> <p>In remembering and communicating their decision to other parents in MMR talk, some issues, such as the importance of choice, become a safe idiom through which to verbalise more ambiguous experiences.</p> <p><i>Do you think you think about it differently now post event than the way you were thinking about it then?</i></p> <p>Possibly, I think, I don't think I would change my mind and have the MMR but I don't necessarily think the MMR is a bad vaccine, that there is a problem with the vaccine. I just think there should be a choice for parent to, you know, so that you can make the decision yourself. Unless something comes out that there is absolutely no link with autism, it is completely safe, I think the choice element should be there and that's how I felt at the time that I wanted to make that choice and that's what I chose for my children. But I just think the choice should be there for all parents (Nurse and mother of two children both vaccinated with single vaccines).</p>	

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<p><b>(Raithatha et al. 2003)</b></p> <p><b>Title:</b> A qualitative investigation of vaccine risk perception amongst parents who immunise their children: a matter of public health concern</p> <p><b>Year:</b> 2003</p> <p><b>Journal:</b> Journal of Public Health medicine</p> <p><b>Volume:</b> 25</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> A</p>	<p><b>What was/were the research questions:</b> To assess vaccine risk perception of parents</p> <p>To identify strategies to prevent further deterioration in uptake</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Conceptual framework derived from factors which influence the risk characteristics of hazard (psychometric paradigm)</p> <p><b>How were the data collected:</b> Data were collected through in-depth interviews at 2 nurseries in Norfolk (1 rural and 1 urban).</p>	<p><b>What population were the sample recruited from:</b> All parents of children attending 2 nurseries in Norfolk (1 rural and 1 urban)</p> <p>15 parents (14 mothers and 1 father): mean age: 34 yrs (3.9) mean no of children: 2 (1-3) median socioeconomic class: I/II/III (skilled non-manual) and ranged from I (professional) to IV (semi-skilled)</p> <p>All their children were fully immunized</p> <p>Subjects were unknown to the researcher before the interview</p> <p><b>How were they recruited:</b> Convenience sampling</p> <p><b>How many participants were recruited:</b> 8/35 parents from the Urban nursery and 7/20 parents from the village nursery</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific</b></p>	<p><b>Brief description of method and process of analysis:</b> Transcribed texts were analysed using interpretive phenomenological analysis, in order to explore participant's views by attempting to achieve an understanding of their personal world, and trying to make sense of their thoughts through interpretation by the researcher. The qualitative data-handling program Atlas was used to assist analysis. Some themes were governed by the semi-structured questions such as 'risk of vaccine'. These are termed 'coding down' themes. Others emerged directly from the data, termed 'coding up' themes. The analysis took on a cyclical approach with a reanalysis of all interviews using all the themes identified. Finally themes were analysed for connections to form over-arching frameworks.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <i>'MMR then there are great concerns because it is not just the case of being ill afterwards you could sort of end up with problems for life, and that is a terrifying concern' (Piloted parent 3)</i> <i>'And you take this tiny tiny fragile little little baby and you start putting needles into them, and it does seem an awful lot to cope with at the time' (rural nursery parent 1)</i> <i>'I think it might be one thing one day and then the next month they have done further investigations and the scientists are saying oh no perhaps this isn't correct you know and they will change' (rural nursery parent 2)</i> <i>'I also think that the way in which you are asked to participate is not as pleasant as it could be, ... I should have just turned in and waltzed in and not ask any questions, got it done and bingo and got ready for the next one' (urban nursery parent 4)</i> <i>'Doctors even between themselves have very different views on vaccines' (rural nursery parent 4)</i></p>	<p><b>Limitations identified by author:</b> None</p> <p><b>Limitations identified by review team:</b> Characteristics (sex, ethnicity, age etc) of researchers not reported</p> <p>Participants' children were all fully immunized</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring a variety of populations or settings should be conducted</p> <p><b>Source of funding:</b> NR</p>

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		<b>inclusion criteria:</b> NR	<p><i>'That we have had with BSE and everything else, I think the trust factor has gone. And I just don't think that people believe what they are told anymore' (rural nursery parent 6)</i></p> <p><i>'Now if you work of the basis that it is the right thing for your child to do, and GPs are bound in their duty to do the right thing by their patients, then why is there a need for a financial incentive?' (Piloted parent 1)</i></p> <p><i>'But I don't believe blindly in everything that they tell me, I do think it should be questioned ... if there was something I wasn't sure or certain about, then I would go and do my own research' (rural nursery parent 4)</i></p> <p><i>'Because I have actually chosen positively to go down that course of action, and that results in an injury to them. It is just unthinkable' (rural nursery parent 1)</i></p> <p><i>'Oh I would definitely blame myself definitely. Um yeah no doubt about it there would be one person and that would be me. Because the vaccines were there and they were offered to me and I chose not to take them, so that would be myself yeah definitely' (rural nursery parent 6)</i></p>	

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<b>(Ramsay et al. 2002)</b>  <b>Title:</b> Parental confidence in measles, mumps and rubella vaccine: evidence from vaccine coverage and	<b>What was/were the research questions:</b> To describe trends regular surveys since 1995, of parental knowledge and attitudes to all childhood vaccinations.  To examine evidence of the impact of recent adverse publicity on parental confidence in MMR vaccine  <b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b>	<b>What population were the sample recruited from:</b> 132 enumeration districts in England  <b>How were they recruited:</b> Random location sampling, using a tightly controlled form of quota sampling  <b>How many participants were recruited:</b> In September and October 2001, 1013 interviews were	<b>Brief description of method and process of analysis:</b> Mothers were asked to assess the safety of immunisations, including MMR, by rating them as 'completely safe', 'slight risk', 'moderate risk' or 'high risk'. The demographic profile of the sample (in terms of age, socioeconomic grade of the chief income earner in the household and geographical location) was also collected. Data were weighted using these characteristics, according to the National Readership Survey  <b>Key themes (with illustrative quotes if available)</b> Awareness of MMR, after prompting with a list of vaccines, was extremely high at 96%. 86% of mothers were aware of	<b>Limitations identified by author:</b> Details of non-responders were not collected and we are therefore unable to assess the effect that any refusals or non-contacts may have on the survey findings  Parental attitudes may not translate into actual behaviour with an individual child. However, a high proportion of parents who said they would

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<p>attitudinal surveys</p> <p><b>Year:</b> 2002</p> <p><b>Journal:</b> Journal of General Practice</p> <p><b>Volume:</b> 52</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score:</b> A</p>	<p>NR</p> <p><b>How were the data collected:</b> For each survey, face-to-face interviews are conducted at home with a nationally representative sample of mothers of children aged under three years. Interviewers approach consecutive households in 132 randomly selected enumeration districts, each constituting around 150 house-holds, until the full quota of mothers was obtained. This technique ensures a representative sample of geographic and socioeconomic factors.</p>	<p>conducted across 132 sampling areas in England</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p>MMR without prompting. This level of spontaneous awareness had risen significantly from around 60% in 1995 (<math>p &lt; 0.01</math>).</p> <p>74% of mothers reported seeking advice from health professionals before having their children immunised. Of these mothers, 91% reported being told about the benefits, and 75% about the side effects, of immunisation.</p> <p>Perceived safety of MMR has been declining since 1995 and a higher proportion of mothers are now more concerned about the safety of MMR vaccine than whooping cough vaccine. Between February 1998 (the peak of negative publicity that accompanied publication of a <i>Lancet</i> article<sup>2</sup>) and October 2000, some recovery was observed. In January 2001, a further publication, suggesting that the side effects of MMR vaccine had been insufficiently studied, received widespread media attention.</p> <p>Perceived safety of MMR vaccine fell to 64% in March 2001, but this fall was again followed by some recovery in confidence later that year. Mothers from higher socioeconomic grades were less likely to agree that MMR was safe.</p> <p>In September/October 2001, of the 387 mothers from ABC1 families, 58% thought that MMR was safe or carried only a slight risk, compared with 73% of the 626 mothers from C2DE families (<math>P &lt; 0.001</math>).</p> <p>Despite the increase in mothers' concerns about the safety of MMR, the vast majority of mothers intended to fully immunise another child in the future.</p> <p>In September/October 2001, 92% of mothers agreed that they would allow another child in the future to be fully immunised against all childhood diseases. Only 60 (6%)</p>	<p>refuse MMR in the future reported having refused MMR in the past, suggesting that attitudes and behaviour are related.</p> <p><b>Limitations identified by review team:</b> Authors speculate on the relationship between attitudes and behaviour with media coverage, as a decline in perceived safety of MMR since 1995 was observed at the same time as the peak of negative publicity in February 1998. However, there was no data on media to sufficiently support these speculations.</p> <p>Demographic data on parents or their children is not reported</p> <p>Data is not provided or compared for those who chose to immunise versus those that did not immunise.</p> <p>Figures and significance levels are often not reported</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well conducted studies exploring parental attitudes and behaviour need to be</p>

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			said they would refuse to have a future child immunised with MMR; 48 (80%) of these reported having refused MMR for a child in the past	conducted in well defined populations and settings  <b>Source of funding:</b> NR

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p><b>(Smith, McCann, &amp; McKinlay 2001)</b></p> <p><b>Title:</b> Second dose of MMR vaccine: health professional's level of confidence in the vaccine and attitudes towards the second dose</p> <p><b>Year:</b> 2001</p> <p><b>Journal:</b> Commun Dis Public Health</p> <p><b>Volume:</b> 4</p> <p><b>Quality</b></p>	<p><b>What was/were the research questions:</b> To determine whether health professionals confidence in MMR vaccine was affected and to assess professional knowledge and attitudes towards the second dose of MMR</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> The study was undertaken in June 1998. Questionnaires designed to measure confidence, knowledge and attitudes regarding the MMR vaccine were distributed to 238 general practitioners, 121 Practice nurses and 53 Health visitors, via the Health Authority internal mailing system. No further details provided. Questionnaires were distributed twice.</p>	<p><b>What population were the sample recruited from:</b> General practitioners, practice nurses and health visitors practising in an inner city, Health Authority.</p> <p><b>How were they recruited:</b> NR</p> <p><b>How many participants were recruited:</b> 136 General Practitioners, 78 Practice Nurses and 40 Health visitors</p> <p>Response rate was 47%, before reminders were sent</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><b>Brief description of method and process of analysis:</b> Results were recorded in a computerised questionnaire application and 20% of the data were randomly validated. No further information provided</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Crohn's disease and autism were considered to have a low association with MMR.</p> <p>Confidence with MMR was reasonable strong with 212 (83.4%) professionals selecting higher levels of confidence. There was a fall following recent publications. 59.4% professionals indicated a maximum confidence level before the publications whilst only 40.9% indicated the same level of confidence after the publicity. Practice nurses and health visitors were less confident about the safety of MMR vaccine than general practitioners. 48.5% of GPs compared with 33.3% of practice nurses and 30% of health visitors responded with the maximum confidence level. 61% of professional felt that more research was warranted to establish the safety of MMR and 19% were not sure.</p> <p>A significant proportion of health professional were unsure about the need for a second dose of MMR vaccine. More than 1 in 10 professionals stated that a second dose of MMR was unnecessary and 40% of respondents were unsure about the need for a second dose. Half the sample stated that the second dose was necessary.</p>	<p><b>Limitations identified by author:</b> 24 % of the sample were not directly involved in administering the vaccine</p> <p><b>Limitations identified by review team:</b> Recruitment criteria not detailed.</p> <p>Detail lacking for sample population, including exclusion and inclusion criteria</p> <p><b>Evidence gaps and/or recommendations for future research:</b> To explore if health professional are fully aware of existing research.</p> <p>To investigate knowledge, beliefs and attitudes or patients from the same health authority.</p> <p><b>Source of funding:</b> NR</p>



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<b>score:</b> (-)  <b>Applicability score:</b> A			<p>55.1% of general practitioners compared with 41% of practice nurses and 40% of health visitors considered the second dose to be necessary.</p> <p>Health professionals were more likely to encourage uptake of first dose than the second dose. 85% of respondents reported that they would encourage and reassure parents about the need for the first dose, only 169 (67%) would do so for the second dose. Alternative methods of promoting immunisation such as offering literature and referral to the Immunisation Advisory Clinic were more likely following refusal of the first dose than the second dose. 2% of respondents admitted that they would not intervene following non-compliance with the first dose, compared to 13% with the second dose.</p>	

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<b>(Smith, Yarwood, &amp; Salisbury 2007)</b>  <b>Title:</b> Tracking mothers' attitudes to MMR immunisation 1996-2006  <b>Year:</b> 2007  <b>Journal:</b> Vaccine	<b>What was/were the research questions:</b> The 30 <sup>th</sup> wave of parental attitude research  To demonstrate how attitudes in relation to MMR have evolved over the last 10 years (1996-2006)  <b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR  <b>How were the data collected:</b> Face-to-face interviews were conducted in the home using multi-media Computer Assisted Personal Interviewing (CAPI).	<b>What population were the sample recruited from:</b> Mothers of children aged < 36 months, nationally representative of mothers with children under 3 years of age  <b>How were they recruited:</b> Consecutive households approached in 167 randomly selected enumeration district, each constituting approx 150 households, till a full quota of 1004 interviewees was obtained  <b>How many participants were recruited:</b> 1004 mothers of children aged	<b>Brief description of method and process of analysis:</b> The response to the open-ended questions was recorded verbatim. For closed questions, the response was recorded using a pre-coded answer list.  <b>Key themes (with illustrative quotes if available) relevant to this review:</b> ABC1 mothers (85%) can name MMR more than C2DE mothers (p<0.05)  Remained at universal level at 95% recognising MMR MMR top of vaccination issue for mothers  MMR completely safe: 35% (this level last seen in 2001) MR posing a slight risk: 39% (this level last seen in 2001)  More C2DE mothers than ABC1 mothers considered MMR completely safe (38% vs 31%, p<0.05)	<b>Limitations identified by author:</b> Quantitative data on attitudes reported, did not allow in-depth analysis of mothers' views and understanding of immunisation programme  Questionnaires interviews carried out during the day with the primary carer of the child  Working mothers under-represented  Only views of mothers willing to be interviewed were sought: may introduce bias

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p><b>Volume:</b> 25</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b> A</p>	<p>The questionnaire covered all aspects of the immunisation process. Approximately 100 questions were asked taking about 45 min to complete. There were open-ended and closed questions, which required 'spontaneous' or 'prompted' answers.</p>	<p>less than 36 months. Mothers who took part were nationally representative of those with children under 3 years of age</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p>Mothers considered MMR completely safe or posing a slight risk : 74% (from 60% in 2002) ABC1 mothers (74%), C2DE mothers (75%)</p> <p>Meningitis perceived as the most severe, mumps, measles and rubella as the least severe</p> <p>14% (24% in 2002): same for ABC1 and C2DE mothers, a considerable narrowing of the gap between the more negative group of ABC1 mothers and the more positive C2DE mothers</p> <p>11% (7% postponers and 4% rejectors) 6% (including mothers who have delayed MMR indefinitely or refused MMR outright), little difference by age, social grade or whether first time parents</p> <p>~32% -44% trusted information from health professionals and the NHS than the Government (~16% a slight risk)</p>	<p><b>Limitations identified by review team:</b> None</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed studies in a variety of populations or settings should be conducted</p> <p><b>Source of funding:</b> Not reported</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p><b>(Wroe et al. 2005)</b></p> <p><b>Title:</b> Feeling Bad about immunising our children</p> <p><b>Year:</b> 2005</p> <p><b>Journal:</b> Vaccine</p>	<p><b>What was/were the research questions:</b> To investigate parental decisions about MMR and single vaccinations</p> <p>It was hypothesised that investigated decisions about early childhood immunisations, emotion-related variables will have an association with the final immunisation decision over and above perceptions of physical risks of immunisations and of disease</p> <p><b>What theoretical approach (e.g.</b></p>	<p><b>What population were the sample recruited from:</b> Bromley Primary Care Trust</p> <p><b>How were they recruited:</b> Parents of 1 in 3 (randomly selected) children turning 1 year during a given period were contacted when the children were 10-12 months of age to ask if they would like to take part.</p> <p><b>How many participants were recruited:</b></p>	<p><b>Brief description of method and process of analysis:</b> Scales were from 0-100, with 0 being the least extreme and 100 being the most extreme. Regression analysis was then used to investigate the extent to which: demographics, perceptions of physical risks and benefits, and emotion-related variables predict ratings of likelihood of immunising. Logistic regression analyses were used to investigate the extent to which the decision whether or not to opt for MMR could be predicted</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> 70 (62%) of participants opted for MMR, 13 (12%) opted for single vaccines and 30 (26%) opted for no vaccines. One parent could not vaccinate because their child had</p>	<p><b>Limitations identified by author:</b> The population sample may be biased, as the response rate was not 100%. Those who responded may have been particularly interested in issues related to immunisations.</p> <p>The sample was more educated than a random population sample. However, comparisons of immunisation decisions. Of individuals recruited of those that did and</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p><b>Volume:</b> 23</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> A</p>	<p><b>Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Participants were contacted via letter to ask if they would like to take part in the study. Participants who returned completed questionnaires were then contacted after their child was 16 months of age to ask about the immunisation decision. No further information on delivery or setting provided.</p>	<p>114 returned completed questionnaires</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p>leukaemia.</p> <p>Likelihood of immunising with MMR as the dependent variable: The strongest predictor of MMR decision rating was anticipated regret if harm occurred as a result of not immunising (<math>p &lt; 0.001</math>), followed by anticipated regret if harm occurred as a result of immunising with MMR (<math>p &lt; 0.001</math>) and anticipated regret if harm occurred as a result of immunising with single vaccines (<math>p &lt; 0.005</math>), predicting a total of 41% of the variance.</p> <p>Likelihood of immunising with single vaccines as a dependent variable: Anticipated regret if harm occurred as a result of immunising with MMR was the strongest predictor of likelihood of immunising the child (<math>p &lt; 0.001</math>). This was followed by anticipated regret if harm occurred as a result of immunising with single vaccines (<math>p &lt; 0.005</math>), feelings of responsibility if harm occurred as a result of immunising with MMR (<math>p &lt; 0.05</math>), predicting a total of 25% variance.</p> <p>Predicting immunisation decisions: Demographics did not show any significant effects on the decision whether or not to opt for MMR (<math>p &lt; 0.58</math>). Perceptions of physical risks and benefits demonstrated a significant effect of perceived effectiveness of MMR (<math>p &lt; 0.005</math>, OR = 0.97, 95% CI 0.94-0.99). Emotional variables demonstrated a significant effect of anticipated regret if harm occurred after not immunising (<math>p &lt; 0.05</math>, OR = 0.98, 95% CI 0.97-1.00). Decision balance demonstrated a significant effect (<math>p &lt; 0.005</math>, OR = 0.18, 95% CI: 0.06-0.53). A similar pattern of findings was observed when investigated factors that influenced the decision whether or not to immunise at all (these findings not detailed clearly).</p>	<p>did not complete the questionnaire demonstrated no significant differences in MMR uptake.</p> <p>It is not possible to know which beliefs are the prime cause of the decision and which are the supporting beliefs.</p> <p>It is likely that media reports that are emotional and sensationalised have a directed effect on emotions, possibly increasing the sense of responsibility and anticipated regret of an action that may cause harm, thus increasing the releases of omission bias.</p> <p><b>Limitations identified by review team:</b> No comparison group</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed studies in a variety of populations or settings should be conducted</p> <p><b>Source of funding:</b> Wellcome Trust</p>

Evidence table for studies reporting knowledge, attitudes, values and beliefs of Hepatitis B

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p><b>(Penrice, McMenamin, &amp; Cameron 2000)</b></p> <p><b>Title:</b> Hepatitis B immunisation of infants of risk</p> <p><b>Year:</b> 2000</p> <p><b>Journal:</b> Communicable disease and public health</p> <p><b>Volume:</b> 3</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score:</b> B</p>	<p><b>What was/were the research questions:</b> To identify possible problems encountered with the process of hepatitis B immunisation.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Questionnaire</p>	<p><b>What population were the sample recruited from:</b> GPs in Glasgow</p> <p><b>How were they recruited:</b> Through a questionnaire sent to all GPs of infants at risk of Hepatitis B, identified as babies born to mothers in Glasgow to be HbsAg positive at antenatal screening.</p> <p><b>How many participants were recruited:</b> Not clear, 34/38 GPs returned questionnaires</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><b>Brief description of method and process of analysis:</b> Descriptive statistics, details not provided</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Response rate was 89%</p> <p>The results of the questionnaire showed that the barriers to successful completion of hepatitis B immunisation of infants at risk were: lack of coordination, inadequate communication, lack of clarity of responsibility for immunisation and problems with the delivery of medical services to patients from ethnic minority groups. These were not further specified.</p> <p>21/34 (61%) of general practitioners thought that hepatitis B immunisation should be their responsibility. 26/34 (76%) of GPs thought that an appointment system similar to that in operation for primary immunisations would help.</p>	<p><b>Limitations identified by author:</b> NR</p> <p><b>Limitations identified by review team:</b> Limited details provide on the participants, their recruitment method, data collection and analysis.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed qualitative studies</p> <p><b>Source of funding:</b> NR</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p><b>(Hinds &amp; Cameron 2004)</b></p> <p><b>Title:</b> Acceptability of universal hepatitis B vaccination among school pupils and parents</p> <p><b>Year:</b> 2004</p> <p><b>Journal:</b> Communicable disease and public health</p> <p><b>Volume:</b> 4</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b> B</p>	<p><b>What was/were the research questions:</b> To investigate the attitudes towards hepatitis B of secondary school pupils (aged 12-13 years) and parents using semi-structured focus group discussions.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Grounded Theory</p> <p><b>How were the data collected:</b> Nine semi-structured focus group discussions, five with pupils and four with parents.</p>	<p><b>What population were the sample recruited from:</b> Four secondary schools in greater Glasgow selected to reflect the range of socio economic religious and ethnic groups across the area.</p> <p><b>How were they recruited:</b> Each school was asked to invite pupils aged 12-13 and parents to attend focus groups during May and June 2001.</p> <p>Once sufficient pupils agreed to participate, teachers were asked to draw pupils at random with equal numbers of male and females.</p> <p><b>How many participants were recruited:</b> 50 pupils (20 males/30 females) 39 parents (36 mothers/3 fathers) 3 out of the 4 schools had a high deprivation category score (based on Carstairs score)</p> <p>The ethnic mix of the 4 schools was, 61%, 79%, 97% and 98% Caucasian.</p>	<p><b>Brief description of method and process of analysis:</b> The data were collected and analysis manually. Transcripts were read repeatedly and emergent themes were used to code sections of the text. Data were then delimited by a process of comparing and connecting themes.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> The key themes were</p> <ul style="list-style-type: none"> <li>• Immunisation in general</li> <li>• Universal hepatitis B vaccination for school pupils</li> <li>• Knowledge of hepatitis B</li> <li>• Decision for hepatitis B</li> </ul> <p><b>Immunisation in general</b> Although most pupils generally disliked vaccinations, they understood their importance. Of the parents who expressed opinion regarding universal immunisations most were in favor, however some felt possible side effect were not always disclosed and they highlighted the case of MMR.</p> <p><i>'I'm fully supportive of immunisation, I think I do feel though that sometimes we're not given all the facts and you know the negative sides are unsaid or are always, you know, implicit rather than explicit and I think that's always a concern</i></p>	<p><b>Limitations identified by author:</b> Large proportion of mothers amongst parents</p> <p><b>Limitations identified by review team:</b> To determine applicability to wider population more information on the religions of the study group may have been useful.</p> <p>There was a high proportion of mothers in the parent group.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> GlaxoSmithKline</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
		<p>Only one school was Roman Catholic, the other three were Nondenominational</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><i>really.</i>' - Parent</p> <p>Pupils felt that they liked having vaccine at school as they felt supported. <i>'If you see all your friends having it you'll feel more confident.'</i> – Pupil</p> <p>Most did not want to be informed that they were going to have them too far in advance as they felt it made them more nervous.</p> <p>Most parents were for vaccinations being delivered at school, and thought their children thought likewise.</p> <p>A minority of pupils and parents perceived a lack of privacy and embarrassment to be barriers to vaccination in school.</p> <p><b>Knowledge of hepatitis B</b> Most pupils admitted to knowing little or nothing about hepB. Few parents were well informed and this was primarily due to their occupations or personal experience of friends or family having been infected. Overall there was general lack of awareness.</p> <p>Many of the pupils failed to understand for Hep b to be transmitted required contact with infected body fluids. However, this lead to the belief that body piercing, tattooing and sharing toothbrushes would auto-matically lead to hepB infection, generating anxiety with comments such as <i>'How can you get it because you know how it's in your liver, how can you get it if you pierce your ear?'</i>- Pupil</p> <p>The routes of transmission was also not well understood by adults alike, some felt that only drug users were at risk highlighted through comments</p>	

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			<p>such as, 'I thought it was just drug users that got it', - Parent</p> <p>Most pupils could see that they may be at risk in the future and protection would be required, this was also a concern for parents however it was tied to the theme of drugs users, '...I mean we don't know how promiscuous our children are going to be or if they are going to be intravenous drug users or not. We would all hope that they wouldn't be but....'- Parent</p> <p>Parents more than pupils wanted further information on such things as the risk of infection, and its long-term consequences.</p> <p><b>Universal hepatitis B vaccination for school pupils</b></p> <p>There was confusion amongst parents about the need to vaccinate, if their children were not perceived to be at high risk which is highlighted in the following quote, 'So if it's only done for people at high risk then why would they want to do it for children if they're not at high risk then?'</p> <p>Most pupils felt it unfair that adolescents elsewhere were routinely vaccinated against hepB while those in the UK were not, but opinion amongst parents was divided.</p> <p>Whilst some parents perceived the UK to be lagging behind other countries, others felt that adopting a cautious attitude could be beneficial.</p> <p>Many pupils had not understood that hepB vaccination involved a series of three injections and the majority were unhappy about having more than one injection, however few felt that this would be a</p>	

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			<p>barrier.</p> <p>Parents felt pupils would agree to be immunised, although unwillingly in some cases and parents felt that emphasizing the importance of being immunised would help with getting children to complete the series.</p> <p>When the possibility of receiving a newly developed hepB vaccine was raised, there was a mixed response</p> <p>from parents, with some expressing suspicion as there may be less safety data for a newer vaccine. Many parents felt strongly that they should be provided with information about any potential side effects of hepB vaccination and that they required further evidence of vaccine safety before they could decide as to whether their child should be vaccinated. They would also like more information on vaccine efficacy and duration of protection. <i>'...I would like to see the side effects first before I would sign anything.'</i> - Parent.</p> <p>Some parents felt that vaccination should be accompanied by a school education programme about transmission of hepB, possibly with the input of health professionals so as their children were aware of the level of protection it offered them, illustrated in the following quote, <i>'I have a slight concern in if you start vaccinating them against it, they'll just forget it's out there...there's got to be a lot more education as well'</i> - Parent.</p> <p>A few parents expressed concern that vaccinating against hepB may mean that some adolescents could indulge in high-risk behaviours.</p>	



Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			<p><i>I still have a fear that there are other viruses out there and if they get this [vaccination] and they think "right that's me protected from hepatitis, I don't need now to worry. Now I think it has to be made clear that they still do need to protect themselves...it's not a go ahead to behave however you want to. – Parent</i></p> <p><b>Decision for hepatitis B</b> If it were offered most pupils indicated that they would want to discuss it with their parents or carer. For some the decision to receive it would be their choice, while for others it would be their parents wishes.</p> <p>Most parents wanted their children to have time to discuss issues relating to hepB, although there was division among parents as to whether home or school was the best place for this.</p> <p>The majority of pupils and nearly all parents were in favour of the introduction of hepB vaccination for S1 pupils as illustrated by the following quotes,</p> <p><i>...we're better getting it [vaccination] when we're younger than regretting it when we're older'- Pupil</i></p> <p><i>...I mean, you know they're sort of safe if they do get the injection because as you know there's so many things going about, diseases and drugs and there is children that have sex, underage sex, you know, so I think it's a good idea. - Parent</i></p> <p>No religious, cultural or socioeconomic barriers to being vaccinated against hepB were raised in the discussions.</p>	

Evidence table for studies reporting knowledge, attitudes, values and beliefs of BCG

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p><b>Fang et al (Fang, Ko, &amp; Wilson 1993)</b></p> <p><b>Title:</b> BCG vaccination scars: incidence and acceptance amongst British high-school children</p> <p><b>Year:</b> 1993</p> <p><b>Journal:</b> NR</p> <p><b>Volume:</b> NR</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> A</p>	<p><b>What was/were the research questions:</b> To determine the prevalence and acceptance of BCG scars among high-school children of different ethnic origin.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Physical examination (study authors) and interviews. No further information provided.</p>	<p><b>What population were the sample recruited from:</b> Harrow, London in 1991</p> <p><b>How were they recruited:</b> Attendance at one of the three local authority maintained schools in the district in June 1991.</p> <p><b>How many participants were recruited:</b> consent forms were distributed to 325 parents and returned for 287.</p> <p><b>Were there specific exclusion criteria:</b> Children not attending one of the three local authority maintained schools in the district.</p> <p><b>Were there specific inclusion criteria:</b> Children who were negative for tuberculin testing in Harrow between 1989 and December 1990, who received BCG vaccination and who attended one of three local high-schools and whose parents in June</p>	<p><b>Brief description of method and process of analysis:</b> Physical examination of participants BCG scars and interview on acceptance of vaccination and preference for site of vaccination.</p> <p>Data then analysed with SPSS and dBASE III+.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Site: 73.6% of scars in upper quarter band (around insertion of the deltoid); 17.8% in the next higher quarter band; 8.5% in the second highest quarter.</p> <p>Size: mean of largest diameters was 7.26mm (range 1-17mm). Hypertrophic scars were taken as scars with diameter &gt; 13.24mm and made up 3.11% of all BCG scars.</p> <p>Colour: 67.8% were hyperpigmented</p> <p>Elevation: 76% of scars were raised</p> <p>Both sexes had a similar distribution of scars among ethnic groups. The mean diameter was larger among Asian, Oriental, Afro Caribbean, and Arab groups compared with Caucasians, (P&lt; 0.025).</p> <p>A significantly higher proportion of girls (23%) found the scar unacceptable compared to boys (7.3%) (P= 0.0004)</p> <p>The largest diameter scar was found to the main determinant of acceptance (P&lt;0.0001) with children who found the scar unacceptable having bigger scars (8.8 +/- 2.9mm [n=42]) compared with the children who accepted</p>	<p><b>Limitations identified by author:</b> Sample size may not have been sufficient to detect keloid scar.</p> <p><b>Limitations identified by review team:</b></p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> NR</p>

		1991 consented to their participation in the study.	(6.6+/- 2.8mm [n= 120]).  The site and the colour have no relationship to their acceptance.  In terms of preferred site, 8 children preferred no site, 79.9% preferred conventional site (ie upper arm?).  Girls more than boys preferred unconventional (such as inner aspect of upper arm, buttock, thighs, and lower leg) sites (P = 0.0009)	
<p><b>Gordon et al (Gordon, Roberts, &amp; Odeka 2007)</b></p> <p><b>Title:</b> Knowledge and attitudes of parents and professionals to neonatal BCG vaccination in light of recent UK policy changes: A questionnaire study</p> <p><b>Year:</b> 2007</p> <p><b>Journal:</b> BMC Infectious diseases</p> <p><b>Volume:</b> 7</p>	<p><b>What was/were the research questions:</b> To determine attitudes and knowledge of parents and professionals to new policy [the new BCG vaccination policy which moved from a universal, school-based programme to one targeting at-risk groups was introduced in 200???] for the use of BCG vaccine at Royal Oldham hospital.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p>	<p><b>What population were the sample recruited from:</b> Parents and professionals at Royal Oldham Hospital, a district hospital with 3,250 deliveries per year and multiethnic in its population mix.</p> <p><b>How were they recruited:</b> All parents and professionals in the antenatal and postnatal areas, as well as paediatric and neonatal units during a six weeks period in Royal Oldham Hospital.</p> <p><b>How many participants were recruited:</b> A total of 253 questionnaires were returned (number broken down by #parents and professionals returning questionnaires?). The precise number given out is not reported.</p>	<p><b>Brief description of method and process of analysis:</b> Questionnaire demographic and attitude questions, piloted on small sample to test for clarity and language.</p> <p>After questionnaires were returned data were coded and analysed in SPSS</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Of respondents (comprised of 133 parents (52.6%), 63 midwives (24.9%), 26 nurses (10.3%), 17 allied professionals (6.7%) and 14 doctors (5.5%) 71.5% had heard of BCG and 48.6% said they were aware of rules governing who receives it. 63.3 (n=??) % of professionals and 6.0% (n=??) of parents said that they were aware of the new policy that governs who receives the vaccine. When asked 65.1% of respondents didn't know who currently receives the BCG vaccine and only 50% of professionals could accurately say who should receive it under the current policy.</p> <p>When asked to make further comments, (top three responses)  26 said they would like further information</p>	<p><b>Limitations identified by author:</b> NR</p> <p><b>Limitations identified by review team:</b> The number of questionnaires handed out is not reported. From a base of 3250 deliveries per year and the study period of 6 weeks and including staff as well as parents a larger number of surveys were most likely handed out.</p> <p>From the data presented, it is not possible to calculate the response rate or to determine if there</p>

<p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> A</p>		<p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> All parents and professionals in the antenatal and postnatal areas, as well as paediatric and neonatal units during a six weeks period.</p>	<p>15 thought the BCG policy was racist at present 7 said they had tried to get more information, but had not been successful</p>	<p>was any difference in those who chose not to participate in the study.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> <b>Source of funding:</b> Studies exploring broader populations and settings</p>
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Evidence table for studies reporting knowledge, attitudes, values and beliefs of HPV Vaccine

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p><b>(Brabin et al. 2006)</b></p> <p><b>Title:</b> Future acceptance of adolescent human papillomavirus vaccination: a survey of parental attitudes.</p> <p><b>Year:</b> 2006</p> <p><b>Journal:</b> Vaccine</p> <p><b>Volume:</b> 24</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b> B</p>	<p><b>What was/were the research questions:</b> What are the perception and attitudes to HPV vaccinations amongst parents of young adolescents living in Manchester?</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Questionnaire drafted after two focus groups with primary school parents. Questionnaire went through 3 rounds of validation and used Likert scales and yes/no questions. The questionnaire was mailed to parents between March and April 2005 by the schools involved, A short fact sheet was included about HPV and cervical cancer.</p>	<p><b>What population were the sample recruited from:</b> Parents of children aged 11-12 in Manchester.</p> <p><b>How were they recruited:</b> The local authority list of community, voluntary-aided and independent schools was divided into 8 strata on the basis of school type and ethnicity. One school from each strata was randomly selected (using a purpose written computer programme), with 2<sup>nd</sup> and 3<sup>rd</sup> choice in case of refusal. This gave a potential sample of 1,300 to 1,900 students. Two schools refused to participate and one was replaced, resulting in 7 schools taking part.</p> <p><b>How many participants were recruited:</b> Questionnaires returned by 317 parents.</p> <p><b>Were there specific exclusion criteria:</b> NR</p>	<p><b>Brief description of method and process of analysis:</b></p> <p><b>Key themes/results (with illustrative quotes if available) relevant to this review:</b></p> <ul style="list-style-type: none"> <li>• 60% of parents had no prior knowledge of HPV or the vaccine.</li> <li>• 11% were well informed about HPV and the vaccine.</li> <li>• Estimated 81% would agree to their child's vaccination (after adjusting for survey design and response rates) but only 38% were definite.</li> <li>• Socio-demographic factors were not statistically associated with vaccine acceptance.</li> <li>• Parents who discussed the questionnaire with their child (44.4, SE 4.3%) were more likely to support vaccination than those who did not (OR 1.52, 95% CI 0.98-2.35, p=.058).</li> <li>• 6% disagreed with vaccinating before onset of sexual activity and 5.6% said their children should never be vaccinated.</li> <li>• 2.1% thought the vaccine would encourage promiscuity.</li> <li>• Most agreed with universal vaccination (74.4%)</li> <li>• 27% agreed with boys being vaccinated.</li> <li>• 73.9% thought consent should be a joint child/parent decision.</li> <li>• 19% would not take the child's view into consideration regarding consent.</li> <li>• 42% thought the child should be able to request vaccination without parental consent but 48% were opposed.</li> <li>• A question asked whether the vaccine should be given with various information. 85% were in favour</li> </ul>	<p><b>Limitations identified by author:</b> In one strata (Voluntary aided non-Christian schools) the only possible school that could be included in the study refused to take part. Therefore parents of students in this group underrepresented. Could not follow-up non responders due to anonymity agreements with schools and ethics committee.</p> <p>There was a higher response rate from black parents and lower response rate from Indian and some other ethnic groups.</p> <p><b>Limitations identified by review team:</b> Educational background of</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
		<p><b>Were there specific inclusion criteria:</b> NR</p> <p><b>Other:</b> <b>Participants</b> Slightly higher response rate from black parents and slightly lower from Indian and 'other' ethnic groups. <u>Ethnicity:</u> White, 65%; Black-Caribbean, 8%; Black-African, 9%; Indian, 12%; other or no response, 6%.</p>	<p>of information being given on cervical cancer and its prevention, 89.3% for biological information on HPV and other STIs, 71% for information on when and where to get treatment for STIs, 59.2% for sexual abstinence messages, 77.5% for safer sex messages.</p> <p><u>Predictor variables</u></p> <p><u>Predicting probability of agreeing to vaccination</u> Worried about STIs (OR 7.9, CI 2-31.3, p=.001) Worried about safety of vaccination/side effects (OR 0.59, CI 0.40-0.88, p=.006) Convinced of efficacy (OR 51.8, CI 16-167.8, p&lt;.001) Believes authorities (OR 3.8, CI 2.2-6.7, p&lt;.0001) Cultural/religious perspectives will influence decision (OR 0.09, CI 0.03-0.26, p&lt;.001) Communication problems with child (OR 0.13, CI 0.03-0.57, p=.009) Worried that vaccination will increase sexual activity (OR 0.10, CI 0.04-0.26, p&lt;.001)</p> <p><u>Predicting agreement with child getting vaccinated without parental consent</u> Worried about STIs (OR 3.0, CI 1.2-7.5, p=.016) Worried about safety of vaccination/side effects (OR 0.61, CI 0.45-0.83, p=.001) Convinced of efficacy (OR 3.4, CI 1.6-7.3, p=.002) Believes evidence (OR 2.0, CI 1.3-3.0, p=.001) Cultural/religious perspectives will influence decision (OR 0.25, CI 0.11-0.57, p=.001) Worried that vaccination will increase sexual activity (OR 0.36, CI 0.17-0.77, p=.011)</p>	<p>parents not reported.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Interesting result that parents who discussed the questionnaire with their children were more likely to support vaccination, further research would be useful.</p> <p><b>Source of funding:</b> Nuffield Foundation, Max Elstein Trust.</p>

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<p><b>(Brabin, Roberts, &amp; Kitchener 2007)</b></p> <p><b>Title:</b> A semi-qualitative study of attitudes to vaccinating adolescents against human papillomavirus without parental consent</p> <p><b>Year:</b> 2007</p> <p><b>Journal:</b> BMC Public Health</p> <p><b>Volume:</b> 7</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b> B</p>	<p><b>What was/were the research questions:</b> To investigate parents views on making available HPV vaccination to adolescents minors at sexual health clinics without parental consent.</p> <p>Parents were firstly asked if they agreed that a well-informed child should be able to request vaccination at a sexual health clinic without parental consent, and secondly, to provide a reason for this answer.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Ethical perspectives on adolescent autonomy provided the framework for descriptive analysis.</p> <p><b>How were the data collected:</b> Data were collected through a cross sectional survey collected as part of a population based survey of parental attitudes to HPV.</p> <p>The survey was delivered through school administration directly to parents.</p>	<p><b>What population were the sample recruited from:</b> Manchester, UK</p> <p><b>How were they recruited:</b> Parents of year 7 pupils (ages 11–12) in the city of Manchester, UK at 26 inner-city community (state), voluntary-aided (faith-based) and independent (private) secondary schools were stratified into eight strata according to school type and ethnicity, based on data supplied by the Department for Education. Using a purpose-written computer program, one school was randomly selected from each stratum, with alternative second and third choice schools available in the event of refusals This gave a potential sample of about 1500 pupils and allowed sampling across all school types.</p> <p><b>How many participants were recruited:</b> 317 parents responded to the larger study and 305 (96.2%) of these parents answered the closed</p>	<p><b>Brief description of method and process of analysis:</b> Responses to the closed question were measured using a five-point Likert scale (strongly agree, agree, disagree, strongly disagree, don't know).</p> <p>The detailed comments were entered verbatim on to computer and sub-categorised into three groups representing parents giving positive, less positive or ambiguous responses. Within each group, the responses were classified into sub-themes related to ethical principles (such as privacy and confidentiality, informed consent, maleficence and beneficence) and comments illustrating these were extracted for quotation.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> 307 parents answered the question, and of these, 244 (80%) explained their views.</p> <p>Parents with views consistent with support for adolescent autonomy (n= 99) wanted to encourage responsible behaviour, protect children from ill-informed or bigoted parents, and respected confidentiality and individual rights.</p> <p><i>"A child mature enough to request vaccination does not need parental consent."</i> Three other parents made comments such as, <i>"Any child who is attending sexual health clinics would fall into a group who would benefit from this vaccine. They should be able to request it – if they are having sex and seem able to understand the issues"</i>.</p> <p><i>"Parents are not realistic about what their children do, and this may place their children at risk",</i> or, <i>"Too</i></p>	<p><b>Limitations identified by author:</b> Despite a response rate of 22% (n = 317), the major social and ethnic groups were well represented, as were religious views.</p> <p><b>Limitations identified by review team:</b> The date when the survey was delivered is not indicated.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> NR</p>

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		<p>question for this study.</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><i>many parents have their moral views blinding them as to what their children actually get up to. Children should be protected, regardless of this."</i></p> <p><i>"It cannot be bad for a child to seek protection from a disease."</i></p> <p>In contrast, 97 parents insisted on being involved in decision-making. They emphasised adult responsibility for a child's health and guidance, erosion of parental rights, and respect for cultural and moral values.</p> <p><i>"Parents should always be informed"</i></p> <p><i>" My child doesn't request vaccination without parental consent because we are Asian"</i></p> <p><i>"Far too much responsibility for children's health and conduct is being taken out of parent's hands, and, "It's bringing a barrier between child and parents. Instead of parents discussing with their children, ethics, morals and values, the government is allowing the by-pass of parental authority and responsibility, while at other times, eg. for truancy, forcing unreasonable parental authority."</i></p> <p><i>"In the event of side effects, how would parents know what to monitor?"</i></p> <p><i>"parents should know about a child's sexual activity."</i></p> <p><i>"Children... will be informed but often times children are not the best judge to be able to weigh their decisions without parents (adults who have values)" and "Who assesses, (and how) whether the child is well informed ?"</i></p>	



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			<p><i>"Unless parents and children are taught together about the risks of a sexually promiscuous life, I can see only a downward spiral of disease and social disintegration."</i></p> <p>Other parents (n= 48) wanted clearer legal definitions governing parental rights and responsibilities or hoped for joint decision-making.</p> <p><i>"Children are minors. An age should be set for everything, drinking, sex etc and be the same."</i></p> <p><i>"Children over the age of 16 – yes, but younger children should not be taking medical advice without a parent."</i></p> <p><i>"A child should discuss such issues with a parent" and another, "I wouldn't like my daughter to make a life-changing decision without being able to talk to me."</i></p> <p>Socio-demographic characteristics of the 244 parents were compared, parental age, receipt of free school meals and religion were not significantly associated with views on consent, but there were significant differences between ethnic groups, and White and Black Caribbean parents were supportive of adolescent autonomy. Parents who had concerns about sexual health clinics were less likely than those with favourable views to agree to future HPV vaccination, even with parental consent (67% versus 89%; chi square: <math>p &lt; 0.001</math>).</p>	

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<p><b>(Lloyd et al. 2008)</b></p> <p><b>Title:</b> Adolescents' reactions to HPV information: an experimental study</p> <p><b>Year:</b> unpublished</p> <p><b>Journal:</b> NA</p> <p><b>Volume:</b> NA</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score:</b> B</p>	<p><b>What was/were the research questions:</b> To examine emotional, attitudinal and motivational reactions to information on human papillomavirus (HPV) in girls within the age range of the HPV vaccination 'catch-up' programme.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Participants were randomly allocated to receive information on HPV, Chlamydia or recycling. All three were presented with a similar layout and design, and contained a similar breadth of content. The health-related information covered prevalence, detection, prevention, treatment, and symptoms. Data were collected in controlled classroom settings. Equal numbers of the three types of information materials were placed randomly within the questionnaire packs, and the packs given out sequentially. Supervision ensured that no discussion took place during completion of the questionnaires. Five minutes were given for information exposure, after which</p>	<p><b>What population were the sample recruited from:</b> Two 'London' schools, no further information reported.</p> <p><b>How were they recruited:</b> NR</p> <p><b>How many participants were recruited:</b> 174</p> <p><b>Were there specific exclusion criteria:</b> Refusal to participate in the study.</p> <p><b>Were there specific inclusion criteria:</b> Present on the day of the study and attending either of the two participating schools.</p>	<p><b>Brief description of method and process of analysis:</b> Scores on the psychometric measures were compared using analyses of variance (ANOVA), with three levels of information condition. Post-hoc tests compared HPV information with control information. For the behavioural intentions, the proportion of participants saying 'likely' or 'very likely' to each was used as the outcome, and results analysed via Chi square. A matrix-based approach was used to organise the qualitative data and to identify common themes.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>Cognitive response</u> The HPV information group made an average of 10.2 correct answers on the HPV knowledge scale, compared to 5.9 from participants in the control groups. The between-group differences were significant (<math>F = 31.18, p &lt; .001</math>), and planned comparisons showed higher scores in the HPV information group than either the Chlamydia (<math>t = 7.13, p &lt; .001</math>) or recycling (<math>t = 6.47, p &lt; .001</math>) groups. <u>Emotional response</u> There were no statistically significant differences between groups on State-Trait Anxiety Inventory scores (<math>p = .586</math>). <u>Motivational / behavioural response</u> Students were positive towards HPV testing (91% likely or very likely), vaccination (82% likely or very likely) and cervical screening (91% likely or very likely). There were significant between-group differences in intentions to accept HPV vaccination (<math>p = .048</math>). Exposure to HPV information was associated with a</p>	<p><b>Limitations identified by authors:</b> Participants were not drawn from a stratified sample in terms of SES status, authors comments that these findings may not be generalisable to lower SES populations.</p> <p><b>Limitations identified by review team:</b> Sampling and recruitment details not provided. No demographic details provided of participants. Ages, ethnicity, religion etc.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed qualitative studies to be conducted</p> <p><b>Source of funding:</b> NR</p>

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	the students completed questionnaires. After this, all participants were given information on HPV and took part in a class discussion.		stronger intention to accept HPV vaccination compared to non-health control (p = .019), but the effect did not reach significance compared with Chlamydia information (p = .070). <u>Qualitative responses</u> Five themes were identified. HPV, cervical cancer and vaccination Saliency of the information Responsibility for vaccine decision Desirability of vaccination in the wider population School-based/opt-out vaccination	
<p><b>(Marlow, Waller, &amp; Wardle 2007a)</b></p> <p><b>Title:</b> Parental attitudes to pre-pubertal HPV vaccination</p> <p><b>Year:</b> 2007</p> <p><b>Journal:</b> Vaccine</p> <p><b>Volume:</b> 27</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> B</p>	<p><b>What was/were the research questions:</b> (1) What are the rates of HPV vaccine acceptance? (2) What age do mothers believe the HPV vaccine should be given? (3) What are attitudes towards HPV vaccination? (4) What are the demographic and attitudinal predictors of vaccine acceptance and earlier vaccination age?</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Questionnaires using Likert scales. Potential predictors derived from social cognition theory, authors' previous research on HPV and pilot focus groups. Questionnaires filled out at home</p>	<p><b>What population were the sample recruited from:</b> Mothers of 8-14 year-old girls at primary and secondary schools in four locations in England representing rural (Norfolk), suburban (Guildford) and inner-city (Lambeth and Nottingham).</p> <p><b>How were they recruited:</b> Lists of all primary and secondary schools in each area obtained. Largest secondary in area and two primary schools contacted (only one in Nottingham) and the head teachers agreed to participate. 1,205 questionnaires sent by mail to homes of mothers of female students aged 8-14 years. Incentive to complete questionnaire</p>	<p><b>Brief description of method and process of analysis:</b> Univariate logistic regression to see whether predictor variables were significantly associated with both acceptance and earlier age for vaccination.  Significant predictors entered into a multivariate logistic regression model to obtain an overall estimate of variance explained.</p> <p><b>Participants</b> <u>Experience of cancer (in close family):</u> yes 57.2%, no 42.8% <u>Heard of HPV before:</u> yes 26%, no 72.8%</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>(1) Vaccine acceptance:</u> 75% said they would probably or definitely accept the HPV vaccine for their daughter. Unsure 19%, No 6%.  <u>(2) Age at vaccination:</u> 80% thought between 10-14 years appropriate. Mean age thought appropriate 12.2 years (SD 1.8). 59% in favour of early vaccination (12 or younger), 41% preferred later (&gt;12)</p>	<p><b>Limitations identified by author:</b> See below about research gap. Schools chosen through convenience sampling may not be representative.</p> <p><b>Limitations identified by review team:</b> Possible selection bias, only large schools selected to participate and recruitment stopped once target reached. Financial incentive for return of the questionnaire. White (92.6%), married (80.8%) and employed (79.9%)</p>

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	<p>between February and June 2006.</p> <p>Participants asked to read a short information leaflet before completing the questionnaire. The leaflet contained short (bullet point list) answers to the following questions: what causes cervical cancer; what is HPV; How serious is HPV; can HPV be detected and treated; and what is the HPV vaccination.</p>	<p>was entry into a cash prize draw.</p> <p><b>How many participants were recruited:</b> 684 completed questionnaires, overall response rate 57% (response rates lower in more socio-economically deprived areas)</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> Mothers of children aged 8-14 years.</p> <p><b>Other details:</b> <u>Mother mean age:</u> 41.1 (target daughter mean age: 11.1) <u>Ethnicity:</u> 92.6% white, 7.4% other <u>Education level:</u> No qualifications, 5.3%; GCSE or equivalent, 28.4%; Vocational, 8.2%; A Levels or equivalent, 9%; College (not degree), 16/6%; Degree 23.1%; other, 8.2%.</p>	<p>years).</p> <p><u>(3) Attitudes towards HPV and vaccination:</u> Mothers thought their daughters would be at significant risk of HPV in the future (mean susceptibility score 8.6 (SD 1.8) out of possible 12) and also thought that HPV could be severe (mean severity score 9.5 (SD 1.9) out of 12). Nearly all mothers thought that those around them (husband/partner, GP, friends, mother, others) would either favour vaccination or would not mind. 77% wished they had access to vaccine when young. 70% glad if vaccine meant end to smear tests. 92% glad if vaccine also prevented genital warts. 12% thought vaccination would make girls more likely to have sex. 18% thought vaccination might increase unprotected sex. 65% worried about side effects. 43% worried about giving their daughters too many injections.</p> <p>Mothers thought that their daughter would need to be older to discuss HPV vaccination (mean 11.08, SD 1.61) than the purpose of vaccinations (mean 9.58, SD 1.72) sex in general (mean 10.61, SD 1.73) and the child would have to be even older to discuss HPV (11.18, SD 1.60) and STIs (11.38, SD 1.57)</p> <p><u>Demographic, cultural and psychosocial predictors of acceptance</u></p> <p><i>Associated with higher acceptance:</i> Target daughter older (OR 1.15, CI 1.04-1.27, p=.007). Family member with cancer (OR 1.61, CI 1.14-2.29,</p>	<p>participants were overrepresented. Results only representative of the population sampled.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Sample quite ethnically and religiously homogenous. Further research needed to look at cultural differences.</p> <p><b>Source of funding:</b> Sanofi Pasteur MSD, Cancer Research UK, ESRC/MRC fellowship</p>

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			<p>p=.007).  Higher perceived severity of HPV infection (OR 1.15, CI 1.05-1.26, p=.003).  Higher perceived susceptibility to HPV (OR 1.27, CI 1.14-1.40, p&lt;.0001).  Husband wants/does not mind vaccination of child vs. would not want (OR 14.51, CI 6.5-34.25, p&lt;.0001).  Discussing sex at early age (OR 1.12, CI 1.01-1.24, p&lt;.036).</p> <p><i>Associated with lower acceptance</i>  Being 'other' religion vs. no religion (OR 0.32, CI 0.11-0.93, p=.036).</p> <p><i>Significant predictors of vaccine acceptance (p value NR)</i>  Discussing sex at an early age (OR 1.22, CI 1.05-1.43).  High normative belief (OR 1.53, CI 1.30-1.79).  Husband's approval (OR 8.18, CI 2.21-30.25).  Mothers wishing vaccine had been available when they were young (OR 2.99, CI 1.87-4.78).</p> <p><i>Significant predictors of less vaccine acceptance (p value NR)</i>  Mothers who were concerned about giving too many vaccines (OR 0.43, CI 0.28-0.68).  Worried about side effects (OR 0.48, CI 0.31-0.73).</p>	
<p><b>(Marlow, Waller, &amp; Wardle 2007b)</b></p> <p><b>Title:</b>  Trust and experience as predictors of HPV vaccine acceptance.</p>	<p><b>What was/were the research questions:</b>  To examine the association between general vaccine attitudes, trust in doctors and the government, past experience with vaccination, and acceptance of HPV vaccination.</p>	<p><b>What population were the sample recruited from:</b>  Lambeth, Guildford, Nottingham and Norfolk.</p> <p><b>How were they recruited:</b>  Convenience sampling was used to select the four</p>	<p><b>Brief description of method and process of analysis:</b>  Data analysed with SPSS. Attitude items combined to create a scale assessing belief in importance of vaccinations and general trust in doctors.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p>	<p><b>Limitations identified by author:</b>  Acknowledge convenience sample chosen and therefore not representative of</p>

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<p><b>Year:</b> 2007</p> <p><b>Journal:</b> Human vaccines</p> <p><b>Volume:</b> 3</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> B</p>	<p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> School-based survey sent through 10 schools in England. Questionnaires were sent in February 2006, posted directly to the home, or where this was not possible sent to home with the children. Participants offered entry into a prize draw on return of the questionnaires. A second mailing took place between March and June 2006.</p>	<p>locations, Lambeth, Guildford, Nottingham and Norfolk and the largest secondary and two largest primary schools in each area were chosen.</p> <p><b>How many participants were recruited:</b> 1205 questionnaires were distributed and 684 were returned. Response rate 56.8%.</p> <p><b>Were there specific exclusion criteria:</b> Only one school was selected in Nottingham because the recruitment target was already reached.</p> <p><b>Were there specific inclusion criteria:</b> Mothers with at least one daughter in school years 4-9 (ages 8-14). Convenience sampling was used to select the four locations, Lambeth, Guildford, Nottingham and Norfolk.</p>	<p><u>Acceptance of HPV vaccination</u> 75% said they would probably (48%) or definitely (27%) accept the vaccine. 19% were unsure and 6% said they would probably or defiantly not accept it.</p> <p><u>Trust in doctors and government</u> Mothers who had high trust in doctors or the government were more likely to accept the vaccine (OR = 1.35, CI: 1.22-1.50).</p> <p><u>Vaccination concern</u> Mothers who believed their own doctor would take their vaccine concerns seriously were more likely to accept the vaccine (OR = 1.70, CI: 1.23-2.36).</p> <p><u>Previous experience of vaccination</u> Having a child experience adverse effects from a previous vaccination was not significantly associated with acceptance (OR = 0.48, CI: 0.21-1.10). Mothers who had delayed (OR = 0.31, CI: 0.19-0.51), refused (OR = 0.33, CI: 0.18-0.59), or regretted (OR = 0.43, CI: 0.19-0.99) a previous paediatric vaccination were less likely to accept the HPV vaccine.</p> <p><u>Variables associated with lowered acceptance</u> Cultural/religious perspectives likely to influence their decision (OR 0.09, CI 0.03-0.26, p&lt;0.001) Communication problems with child (OR 0.13, CI 0.03-0.57, p=0.009) Worries about sexual promiscuity (OR 0.10, CI 0.04-0.26, p&lt;0.001)</p> <p><u>Variables associated with heightened acceptance</u> Worries about the severity of STIs (OR 7.9, CI 2-31.3, p=0.001) Being convinced of the efficacy of the HPV vaccine (OR 51.3, CI 16-167.8, p&lt;0.001) Believing in authorities (OR 3.8, CI 2.2-6.7, p&lt;0.0001)</p>	<p>British population as a whole.</p> <p>Only mothers attitudes were assessed, there not representative of all parents.</p> <p><b>Limitations identified by review team:</b> Possible selection bias, only large schools selected to participate and recruitment stopped once target reached.</p> <p>Financial incentive for return of the questionnaire. White (92.6%), married (80.8%) and employed (79.9%) participants were overrepresented. Results only representative of the population sampled.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Large sample sizes of parents that are</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
				<p>able to be generalised to a wider population.</p> <p><b>Source of funding:</b> Sanofi Pasteur MSD.</p>
<p><b>(Marlow et al. 2008)</b></p> <p><b>Title:</b> Predictors of Adolescent interest in HPV vaccination</p> <p><b>Year:</b> unpublished</p> <p><b>Journal:</b> NA</p> <p><b>Volume:</b> NA</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score:</b> B</p>	<p><b>What was/were the research questions:</b></p> <ol style="list-style-type: none"> <li>1. assess attitudes to vaccination generally and HPV vaccination in particular</li> <li>2. identify demographic and cultural predictors of HPV vaccine acceptability</li> <li>3. explore attitudinal predictors of interest in HPV vaccination</li> <li>4. test the hypotheses that attitudinal factors mediate demographic/cultural differences in intended vaccine acceptance</li> </ol> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Theory informed approach using the Health Belief Model</p> <p><b>How were the data collected:</b> Participants were given information on HPV and then asked to complete a questionnaire</p>	<p><b>What population were the sample recruited from:</b> Two 'further education' colleges in South-East England. One was in an outer London area with a high proportion (61%) of students from ethnic minority backgrounds and 48% receiving an Educational Maintenance Award (EMA – a weekly payment given to students with a low annual household income). The other was in a more affluent area and had a much smaller proportion of ethnic minority students (15%), with only 9% receiving EMA.</p> <p><b>How were they recruited:</b> Not described in detail, participants were female students studying at the above colleges.</p> <p><b>How many participants were recruited:</b> 386 (19 later excluded)</p>	<p><b>Brief description of method and process of analysis:</b> Questionnaires were completed in a class session between April and July 2007. Response rates were calculated from the number of students in the class and the number of completed questionnaires per class. For logistical reasons, a proportion of students (n = 58) completed the questionnaire in two parts, a week apart. Data were analyzed using SPSS. Logistic regression analyses were used to explore associations between demographic, cultural and attitudinal predictors of HPV vaccine acceptability. A mediation analysis was used to assess the proportion of shared variance between demographic/cultural and attitudinal variables.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>General</u> 6% (n=22) had not heard of HPV before taking part in the study. 88% agreed that vaccinations were an effective way to prevent disease 97% thought that the HPV vaccination would be a good way to protect themselves against HPV and cervical cancer (94%). 76% would be worried about side effects from HPV vaccination and 43% agreed that they were afraid of needles. Almost half (43%) thought that 'girls in general' would be more likely to have sex or unprotected sex if they</p>	<p><b>Limitations identified by author:</b> Forced choice responses may have lead to higher adaptability scores.</p> <p><b>Limitations identified by review team:</b> Unpublished paper.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Ethnicity and acceptance of the HPV vaccine warrants further exploration.</p> <p><b>Source of funding:</b> NR</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
		<p><b>Were there specific exclusion criteria:</b> 19 participants questionnaires were excluded because of missing data.</p> <p><b>Were there specific inclusion criteria:</b> Female aged 16-19 studying at one of the colleges who returned a questionnaire.</p> <p><b>Other:</b> Mean age of the students was 17.12 years (range 16-19). 81% were studying A-levels and nearly all had basic level qualifications (at least 5 GCSEs grade A to C; 88%). 60% were from a white background 32% were actively practicing a religion Before reading the information provided, only 6% (n=22) said they had heard of HPV.</p>	<p>had the vaccine.</p> <p><u>Acceptance</u> The majority would be very likely (51.0%) or likely (38.4%) to accept an HPV vaccination with only 7.9% unlikely and 2.7% very unlikely to accept. Participants from the largely white, higher SES, college were more likely to accept the vaccination (93.7% very likely or likely) compared to those recruited through the ethnically diverse, lower SES, college (86.1% very likely or likely; OR=2.38, CI:1.13-5.05).</p> <p><u>Demographic and cultural predictors of interest in HPV vaccination</u> Students from Asian backgrounds were less likely to accept than those from white backgrounds (OR=0.38, CI:0.15-0.95). Compared to those not practicing a religion, students who were practicing Muslims (OR=0.19, CI:0.06-0.59) or practicing Sikh/Hindu (OR=0.12, CI:0.03-0.45) were less likely to accept. Students not speaking English as their first language were less likely to accept than those who did (OR=0.35, CI:0.17-0.45). In a multivariate model, religion was the only variable that remained a significant predictor of vaccine acceptability, with participants from Muslim and Hindu/Sikh backgrounds being less likely to accept HPV vaccination (OR=0.20, CI:0.05-0.90 and OR=0.09, CI:0.01-0.56 respectively).</p> <p><u>Attitudinal predictors of interest in HPV vaccination</u> In univariate logistic regression higher perceived susceptibility was associated with vaccination acceptability (OR=1.94, CI:1.36-2.77), although perceived severity of HPV was not. Participants who had high scores for general or</p>	



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			specific benefits were more likely to accept vaccination (OR=1.46, CI:1.23-1.72 and OR=1.86, CI:1.31-2.63 respectively). Participants who had high scores for general or specific barriers and those who agreed with the item "I am afraid of needles" were less likely to accept the vaccination (OR=0.68, CI:0.54-0.85; OR=0.68, CI:0.53-0.88 and OR=0.78, CI:0.62-0.97 respectively).	
<p><b>(Marlow, Waller, &amp; Wardle 2008)</b></p> <p><b>Title:</b> Sociodemographic predictors of HPV testing and vaccination acceptability: results from a population representative sample of British women</p> <p><b>Year:</b> 2008</p> <p><b>Journal:</b> Journal of Medical Screening</p> <p><b>Volume:</b> 00</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b> A</p>	<p><b>What was/were the research questions:</b> To examine sociodemographic predictors of self-reported screening attendance, intention to accept human papillomavirus (HPV) testing and willingness to accept vaccination for a daughter under 16.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Cross sectional survey</p>	<p><b>What population were the sample recruited from:</b> Face-to-face interviews conducted in England, Scotland and Wales.</p> <p><b>How were they recruited:</b> Data were collected by including questions in the NatCen (National Centre for Social Research) omnibus survey between November 2006 and February 2007. Addresses in England, Scotland and Wales (n ¼ 6100, of which n = 5585 were eligible) were selected using stratified random probability sampling of the Post Office Address File. Face-to-face interviews were carried out at 2981 addresses. The questions on HPV were asked only of female respondents.</p> <p><b>How many participants were recruited:</b> 994</p>	<p><b>Brief description of method and process of analysis:</b> Face-to-face interviews generated data that were analysed using SPSS weighted to account for number of adults in the household and nonresponder demographics. Outcomes were coded into binary variables. Respondents were allocated to one of two groups for HPV testing and vaccination. Respondents who reported being likely or very likely to accept an HPV test were coded as 'acceptors', all other respondents were coded as 'hesitant'. Univariate logistic regression analyses were used to identify sociodemographic predictors of screening attendance and intended acceptance of HPV testing and vaccination.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> 296/994 (30%) of women had daughters under the age of 16 years. On a 10-point scale how willing, they would be to vaccinate their daughter against HPV. The mean rating was 7.9 (standard deviation = 3.1) When the data were recoded, 74% were acceptors (women who responded seven or above) and 26% were hesitant (all others). Acceptance of HPV vaccination for a daughter was not associated with screening attendance, marital</p>	<p><b>Limitations identified by author:</b> Over representation of screening attendees in sample may over estimate HPV vaccine acceptance.</p> <p><b>Limitations identified by review team:</b></p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> The NatCen survey was funded by GlaxoSmithKline Biologicals.</p>

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		<p><b>Were there specific exclusion criteria:</b> Not being a woman aged 25-64.</p> <p><b>Were there specific inclusion criteria:</b> Data from interviews with women aged 23-64</p>	<p>status, ethnicity, education or income. The only variable associated with acceptance was the age of the woman's youngest daughter. Mothers whose youngest daughter was 13–16 years were more likely to be 'acceptors' of HPV vaccination than those with younger daughters (OR ¼ 2.91, 95% CI: 1.27–6.65).</p>	
<p><b>(Noakes, Yarwood, &amp; Salisbury 2006)</b></p> <p><b>Title:</b> Parental response to the introduction of a vaccine against human papilloma virus.</p> <p><b>Year:</b> 2006</p> <p><b>Journal:</b> Human vaccines</p> <p><b>Volume:</b> 2</p> <p><b>Quality score:</b> (-)</p> <p><b>Applicability score:</b> B</p>	<p><b>What was/were the research questions:</b> To provide an indication of parents' views on the potential introduction of the HPV vaccination, assess parents' preferences regarding the timing and delivery of the vaccination and prioritise parents' information requirements and highlight any areas where additional reassurance or support should be provided.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Reported to take qualitative approach.</p> <p><b>How were the data collected:</b> Six small group discussions lasting around one and a half hours were held with parents of 8–10 year olds in London, Nottingham and Sheffield (two groups each). The sites in</p>	<p><b>What population were the sample recruited from:</b> NR</p> <p><b>How were they recruited:</b> NR</p> <p><b>How many participants were recruited:</b> Not clear, between 24-30</p> <p><b>Were there specific exclusion criteria:</b> Outright rejecters of the immunisation programme were excluded at recruitment stage.</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><b>Brief description of method and process of analysis:</b> Group discussions along with single gender discussions were moderated by a researcher of the same gender to ensure that the discussions were as open as possible.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>Attitudes to vaccination - General.</u> There was a high level of general awareness of vaccinations amongst respondents. <u>Addition of new childhood vaccinations</u> Three attitudinal groups Trusting <i>I go along with it because most people have it and you're supposed to protect your children, so I just go along with it really and have what the next one is.</i> Compliant <i>I'm for it but I want everyone to be very straight—for all the information to be out about it.</i> Resistant <i>You know the doctor gets paid a premium for each vaccine that they give—so as a young parent you're caught between the GP wanting to do all the vaccinations because they get all the money for it, and your local health centre wanting to do it because</i></p>	<p><b>Limitations identified by author:</b> NR</p> <p><b>Limitations identified by review team:</b> Population and recruitment methods not clearly defined difficult to determine applicability.</p> <p>Researcher involvement not described in detail.</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Well designed qualitative studies are required</p> <p><b>Source of funding:</b></p>

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	<p>Nottingham and Sheffield were close to large rural areas. Fieldwork took place between 22nd August and 9th September 2005.</p>		<p><i>they get the money for it, so it's something that makes you quite suspicious of the system.</i></p> <p><u>Awareness of HPV and cervical cancer - General.</u> There was very little awareness of HPV, few women had heard of the virus and none of the respondents knew what it was. There was a good general awareness of sexually transmitted infections (STIs) in general but respondents did not link STIs with any particular viruses.</p> <p><u>Response to the association between HPV and cervical cancer</u> Lack of awareness of a virus that was so common and potentially so serious. Respondents felt that there was little personal risk of them catching HPV and it was seen to be preventable through safe sex practices including condom use.</p> <p><u>Response to an HPV vaccination program</u> All participants appreciated the value of a vaccine for cervical cancer but were unconvinced by the link between HPV and cervical cancer. Preventable nature of the virus also undermined the value of the new vaccine. concerns emerged relating to the potential side effects of the vaccine and the sexual nature of HPV transmission. the ideas of sexual activity, safe sex messages and sex education in schools became conflated in respondent's minds. <i>'it's like saying this is the end of your childhood. I feel quite churned up by the thought of it—you're saying 'ok this is the end of your childhood, this is the beginning of your sexually active life and you're going to have this vaccination to protect you from it. 'The idea of injecting my daughter so that she can have sex doesn't sit right with me.'</i> <i>'My issue with a vaccination is you have that choice of vaccination, does that make people take more risks? Say they developed an HIV vaccination, that</i></p>	NR

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			<p><i>level of fear is taken away'.</i>  <i>Your only worry would be that, in some schools, sex education is quite up front, in some schools it's still not.... And your worry would be that if you sent a load of kids in school that haven't got a good sex education programme, would they then think it's okay to go and have sex once they've had that injection?</i>  <i>Mother of boys</i></p> <p><u>Implementation of a school based immunization program</u>  Most respondents were happy with a schools-based programme, but the consensus of the groups was that secondary school was more appropriate than primary.  Parents in the 'Trusting' and 'Compliant' categories could see the advantages of a school-based programme and some parents felt it took away the time burden of taking children to the GP. Moreover, a school-based programme would ensure that all children would be given the opportunity to receive the vaccine. They pointed out that in schools, the vaccination could be delivered alongside sexual health education, allowing children to discuss and debate the issues in context.  Resistant' parents felt that a school-based program would take away their right to consent.</p> <p><u>Ideal age at vaccination</u>  The age of vaccination caused parents to react in a very emotional way and whether or not primary school was the place for sex education at all. They were keen to shield their young children from becoming adults too soon and wanted them to retain their innocence.  Many of the parents became angry at the prospect of exposing primary aged children to the vaccine.</p>	

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<p><b>(Vallely et al. 2008)</b></p> <p><b>Title:</b> Informing adolescents about human papillomavirus vaccination: What will parents allow?</p> <p><b>Year:</b> 2008</p> <p><b>Journal:</b> Vaccine</p> <p><b>Volume:</b> 26</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b> B</p>	<p><b>What was/were the research questions:</b> To evaluate a film on HPV and cervical cancer prevention for school children who will be offered HPV vaccination in the UK</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> Phenomenological</p> <p><b>How were the data collected:</b> Immediately post viewing the film, pupils completed a short questionnaire that included knowledge questions.</p> <p>7 focus group discussions were conducted, four in school with girls and boys in year 8, 1 with 14 school nurses, 2 with specific religious groups (1 Roman Catholic and 1 Muslim). The Roman Catholic group was organised at school, while the Muslim parents were organised through a local mosque co-facilitated with an Arabic student.</p>	<p><b>What population were the sample recruited from:</b> Manchester, UK</p> <p><b>How were they recruited:</b> Parents of year 7 pupils (ages 11–12) in the city of Manchester, UK at 26 inner-city community (state), voluntary-aided (faith-based) and independent (private) secondary schools were stratified into eight strata according to school type and ethnicity, based on data supplied by the Department for Education. Using a purpose-written computer program, one school was randomly selected from each stratum, with alternative second and third choice schools available in the event of refusals This gave a potential sample of about 1500 pupils and allowed sampling across all school types.</p> <p><b>How many participants were recruited:</b> 814 students viewed the film</p>	<p><b>Brief description of method and process of analysis:</b> Using a phenomenological approach qualitative data were analysed thematically, one then additional transcriptions were read, re-read and agreed by two researchers and coded by themes and sub-themes and compared across groups. The proportion of parents who allowed children to watch the film was calculated, as were refusals, opt-out and absentees.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <p><u>Views on key messages of the film</u> HPV causes cervical cancer The film clarified written information sent to parents. Parents and school nurses considered it to be</p> <p><i>'a huge topic to be introducing'...to be factually correct and gave "a nice explanation of where the cervix is".</i></p> <p>HPV is sexually transmitted Parents with older children were concerned about not knowing about HPV sooner. School nurses were concerned that the UK school curriculum does not introduce STIs and cervical screening till after the proposed age of vaccination. There were issues relating to HPV and cervical screening from Muslim women.</p> <p><i>"Yes, even this one is nine years old, I let her (see the film) , but to do the injection, I'm not really going to .....(daughter within earshot) ...She won't do anything. Because I'm sure, sure she won't do anything. I know her".</i></p>	<p><b>Limitations identified by author:</b></p> <p><b>Limitations identified by review team:</b></p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> The Nuttfeild Foundation, the Max Elstein Trust and the University of Manchester.</p>

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		<p>4 student focus groups had six-eight pupils per group. 14 school nurses The number of parents participating is not reported.</p> <p><b>Were there specific exclusion criteria:</b> Those who had not viewed the film on HPV.</p> <p><b>Were there specific inclusion criteria:</b> Those who were recruited to the study who had viewed the film and had consent to participate.</p>	<p>One nurse thought it (the film) should recommend delaying sexual activity, <i>“Because that is a clear way of reducing the numbers of partners they have...”</i></p> <p>Condoms may not fully protect against HPV Neither parent group (Roman Catholic or Muslim) objected to this message. Students seemed to understand the meaning of <i>“sexual contact”</i> which <i>“doesn’t just mean about sex. It means about things like oral sex and stuff like that”</i>.</p> <p>HPV vaccination protects against cervical cancer Parents were most concerned about their lack of knowledge in this area.</p> <p><u>Consent to view the film</u> All 1156 children in year 7 in six schools contacted for consent to view the film. 14 parents returned opt out forms, 814 children viewed the film (70.4%).</p> <p><u>Knowledge after the film</u> Knowledge statements after the film ranged from 62.4% to 97.2% for various messages on HPV. 84.9% correctly answered that there was a new vaccine that will stop you getting HPV.</p>	

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<p><b>(Waller, Marlow, &amp; Wardle 2006)</b></p> <p><b>Title:</b> Mothers' attitudes towards preventing cervical cancer through human papillomavirus vaccination: a qualitative study</p> <p><b>Year:</b> 2006</p> <p><b>Journal:</b> Cancer Epidemiol Biomarkers Prev</p> <p><b>Volume:</b> 15 (7)</p> <p><b>Quality score:</b> (+)</p> <p><b>Applicability score</b> B</p>	<p><b>What was/were the research questions:</b> (1) What are mothers' responses to information about the HPV vaccine? (2) Is an HPV vaccine perceived in the same way as other STI vaccines, or does its link with cervical cancer mean it is thought of differently?</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> 4 focus groups of 5-7 women, each lasting 60 minutes. one was at a local library, two at participants' homes and one at the home of the researcher. All took place in south-east England in August to November 2005. Groups varied in terms of socio-economic and demographic characteristics but it was not reported how women the criteria for placing women in each group.</p>	<p><b>What population were the sample recruited from:</b> Mothers of at least one daughter aged 8-14</p> <p><b>How were they recruited:</b> Snowball sampling from 4 gatekeepers (3 were social contacts of the researchers, 1 recruited by writing to parents of children at a school.</p> <p><b>How many participants were recruited:</b> 24</p> <p><b>Were there specific exclusion criteria:</b> NR (not known – usual in snowball sampling).</p> <p><b>Were there specific inclusion criteria:</b> Mothers of at least one daughter aged 8-14 (again there may be other unknown criteria due to snowball sampling).</p> <p><b>Other details:</b> women recruited in inner and outer London, Sussex and Surrey. £30 incentive given. Age range: 31-48 Marital status: 83% married Homeowners: 83%</p>	<p><b>Brief description of method and process of analysis:</b> <u>Focus groups</u> Topics of discussion: experience and feelings about vaccination in general; views on a hypothetical cancer vaccine; views on hypothetical STI vaccine. After discussion information about the HPV vaccine was given and participants responded to that information. The discussions were tape recorded and transcribed verbatim.</p> <p><u>Analysis</u> Framework analysis: thematic framework designed around background beliefs/experiences of vaccination, cancer vaccines, STI vaccines and HPV. Transcript data arranged under these themes.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> <u>General attitudes to vaccination</u> Broadly positive, main concern was side effects. Some concerned about giving their children too many vaccines/injections.</p> <p><u>Attitudes to hypothetical cancer vaccine</u> Mixed response. Women with fewer qualifications were strongly in favour and that side effects would not put them off. Women with more qualifications worried about side effects and a complacency effect e.g. regarding smoking and unsafe sex and found it harder to consider cancer as a single disease that could be vaccinated against.</p> <p><u>Attitudes to STI vaccines</u> Mixed response. Some in favour but others feared that it may be "teaching them [children]...that it's</p>	<p><b>Limitations identified by author:</b> Sample small and although socio-economically diverse, not representative. No BME women and highly-educated over represented. No women who had previously refused a vaccination. Using focus groups to talk about potentially sensitive issues can lead to some people not participating fully.</p> <p><b>Limitations identified by review team:</b> Study described as an 'Exploratory approach' by researcher but they set the agenda for discussion. Lack of information about the researchers themselves; what is their positionality? How might they influence discussion in the focus groups by their presence?</p>

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		<p>Qualifications: Degree (50%), None (17%) Ethnicity: 100% white British</p>	<p>okay to be promiscuous”, and thought that STI prevention was better served through safe sex education. All groups mentioned the worry of a complacency effect. Some wondered whether too many vaccines might cause complications through interactions.</p> <p><u>HPV</u> None of those in the first three focus groups had heard of HPV, those in the fourth had but the timing of the focus group was one week after media coverage of vaccine trials.</p> <p><u>Reasons to have the HPV vaccine</u> Most were keen for their daughters to have the vaccine to prevent cervical cancer. Some mentioned that they would be happy if their daughters did not have to have smear (Papanicolaou) tests, although this was not described by researchers as an outcome of the vaccination.</p> <p><u>Reasons not to have the HPV vaccine</u> Three of the four groups expressed concerns. Again, the complacency effect was mentioned, and lack of knowledge about the vaccine meant that they had many questions regarding safety and side effects.</p> <p><u>Age of vaccination</u> Most contentious issue. Many were uncomfortable about discussing an STI-related vaccination with their daughters and there was no consensus about whether it was okay to vaccinate their daughters with no previous discussion. Generally felt that once children were at secondary school it would be easier, also that vaccinating daughters as babies would be okay if available.</p>	<p><b>Evidence gaps and/or recommendations for future research:</b> Identified by authors: whether increased information makes women more likely to accept the HPV vaccine for their daughters;</p> <p><b>Source of funding:</b> Sanofi Pasteur MSD, Cancer Research and ESRC/MRC.</p> <p><b>Source of funding:</b> NR</p>



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			<p>“So it’s easier to give it to younger children by saying ‘it’s to prevent...cancer’ than saying to them ‘you’re having this because when you’re older you’re going to have sex and you’re going to get all these horrible diseases’.”</p>	
<p><b>(Wagner, White, &amp; Crowcroft 2007)</b></p> <p><b>Title:</b> Health Protection Agency survey of Primary Care Trust teenage vaccination programmes</p> <p><b>Year: 2007</b></p> <p><b>Journal:</b> Health Protection Agency</p> <p><b>Volume:</b> NA</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b> A</p>	<p><b>What was/were the research questions:</b> The aim of this survey was to gain a better understanding of the way in which the school leaver vaccination programmes are currently run, and also to assess the potential for measuring uptake of the proposed new HPV vaccination programme. Specific questions on HPV included: the preferred place to deliver the routine HPV vaccine for girls aged 12-13 years, the preferred way of delivering a one-off catch-up of HPV vaccine for girls aged 13-16 years, the best way to measure coverage of HPV vaccine routine and catch-up programmes, whether administration of each of 3 doses of HPV vaccine be recorded accurately and whether vaccines given to teenagers (Td-IPV and HPV) should be included in CHIS and how teenage vaccination coverage should be reported to the Department of Health.</p>	<p><b>What population were the sample recruited from:</b> Immunisation leads working in PCTs in the UK.</p> <p><b>How were they recruited:</b> A two-page questionnaire emailed to Health Protection Unit (HPU) immunisation leads on 2 August 2007.</p> <p><b>How many participants were recruited:</b> Seventy-three questionnaires were returned, representing 66 Primary Care Trusts (PCTs) of a possible 143 (46%).</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> Immunisation leads in one of 143 PCTs in the UK.</p>	<p><b>Brief description of method and process of analysis:</b> The questionnaires were analysed as aggregate responses, and by CHIS. Extra comments were presented although the methods used to deal with these is unclear.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> Most respondents (76%) felt the preferred place to deliver the routine HPV vaccine for girls aged 12-13 would be schools, followed by GPs (21%). The preferred way of delivering a one-off catch-up of HPV vaccine for girls aged 13-16 years was through schools (72%) again followed by GPs (23%). Most respondents (75%) thought that the best way to measure coverage of HPV vaccine, for both routine and catch-up programmes would be through their CHIS. Other responses were: Through GPs 4%; Through schools 11% and Through PCTs 10%. 84% of respondents thought that administration of each of 3 doses of HPV vaccine could be recorded accurately in their area. The majority of respondents (89%) thought vaccines given to teenagers should be included in CHIS. More than half (56%) of respondents thought that teenage coverage should be reported via COVER (Cover Of Vaccination Evaluated Rapidly), the system co-ordinated by the Health Protection Agency</p>	<p><b>Limitations identified by author:</b> Possible reporting bias only 46% of PCTs represented.</p> <p>Delivery of school leaving boosters varies even within PCTs (with delivery via GPs, school nurses or a combination). 19% of respondents did not have a school vaccination programme.</p> <p><b>Limitations identified by review team:</b> The potential for bias due to the small number of PCTs responding.</p> <p><b>Evidence gaps and/or</b></p>

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	<p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> Questionnaire</p>		<p>for collection of childhood immunisation data. 35% of PCTs would prefer to use KC50 returns and 8% would use the HPI website.</p> <p><u>Funding and staffing worries</u> Several comments were made of resources and the extra funding required for delivery. Many respondents felt delivery of this vaccine could not be done with existing staffing levels. Clinical and support staff would also be required to identify all educational establishments/locations.</p> <p><u>Difficulties with a school delivery programme</u> Schools were felt the best option for delivery of immunisation to school age children Concern that schools may find three visits difficult when often school nurses only work part time and only during term time. Concern that schools may not welcome the disruption and some schools may fail to cooperate. Concern about the task of preparing and delivering explanations to staff, parents, governors and others. Need for a detailed tracking system will be required, with follow-up vaccination, for girls who miss a routine visit.</p> <p><u>Alternatives to a school delivery programme</u> Next to schools GP surgerys were felt appropriate to administer the vaccine. Some PCTs suggested a different venue could be used for delivery of the HPV vaccine e.g. a health centre, or immunisation clinic.</p>	<p><b>recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> NR</p>

Evidence table for studies reporting knowledge, attitudes, values and beliefs of School Leaver Booster

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p><b>(Wagner, White, &amp; Crowcroft 2007)</b></p> <p><b>Title:</b> Health Protection Agency survey of Primary Care Trust teenage vaccination programmes</p> <p><b>Year:</b> 2007</p> <p><b>Journal:</b> Health Protection Agency</p> <p><b>Volume:</b> NA</p> <p><b>Quality score:</b> (++)</p> <p><b>Applicability score:</b></p>	<p><b>What was/were the research questions:</b></p> <p>The aim of this survey was to gain a better understanding of the way in which the school leaver vaccination programmes are currently run, and to assess the potential for measuring uptake of the proposed new HPV vaccination programme. Specific questions on HPV included: the preferred place to deliver the routine HPV vaccine for girls aged 12-13 years, the preferred way of delivering a one-off catch-up of HPV vaccine for girls aged 13-16 years, the best way to measure coverage of HPV vaccine routine and catch-up programmes, whether administration of each of 3 doses of HPV vaccine be recorded accurately and whether vaccines given to teenagers (Td-IPV and HPV) should be included in CHIS and how teenage vaccination coverage should be reported to the Department of Health.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b></p>	<p><b>What population were the sample recruited from:</b> Immunisation leads working in PCTs in the UK.</p> <p><b>How were they recruited:</b> A two-page questionnaire emailed to Health Protection Unit (HPU) immunisation leads on 2 August 2007.</p> <p><b>How many participants were recruited:</b> Seventy-three questionnaires were returned, representing 66 Primary Care Trusts (PCTs) of a possible 143 (46%).</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> Immunisation leads in one of 143 PCTs in the UK.</p>	<p><b>Brief description of method and process of analysis:</b> The questionnaires were analysed as aggregate responses, and by CHIS.</p> <p>Extra comments were presented although the methods used to deal with these are unclear.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b></p> <p>77% of PCTs had a school leaving immunisation programme, 69% of these check for other vaccinations at the same time</p> <p>School leaving boosters are delivered by GPs (34%), school nurses (36%) or a combination of both (30%).</p> <p>Parents were informed of the school leaving booster through schools(59%), 28% are informed through GPs, 23% through CHIS generated invitation, and 8% through the PCT (some parents are informed by more than one method).</p> <p>Immunisation leads identified children eligible for school leaving boosters as children attending secondary schools within the respondents' PCT (87%); only children attending secondary schools who are also resident in their PCT (2%); all children apart from those attending private schools (9%) and other (2%).</p> <p>Children resident in one PCT but attending school in another are either expected to be vaccinated in the school they attend (20%), or else no arrangements are made for such children (48%). In some areas these children would be expected to be offered vaccination through their GP</p>	<p><b>Limitations identified by author:</b></p> <p>Possible reporting bias only 46% of PCTs represented.</p> <p>Delivery of school leaving boosters varies even within PCTs (with delivery via GPs, school nurses or a combination).</p> <p>19% of respondents did not have a school vaccination programme.</p> <p><b>Limitations identified by review team:</b></p> <p>The potential for bias due to the small number of PCTs responding.</p> <p><b>Evidence gaps and/or recommendations for future research:</b></p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
A	Questionnaire		<p>(32%).</p> <p>Most respondents (76%) felt the preferred place to deliver the routine HPV vaccine for girls aged 12-13 would be schools, followed by GPs (21%).</p> <p>The preferred way of delivering a one-off catch-up of HPV vaccine for girls aged 13-16 years was through schools (72%) again followed by schools (23%).</p> <p>Most respondents (75%) thought that the best way to measure coverage of HPV vaccine, for both routine and catch-up programmes would be through their CHIS. Other responses were: Through GPs 4%; Through schools 11% and Through PCTs 10%.</p> <p>84% of respondents thought that administration of each of 3 doses of HPV vaccine could be recorded accurately in their area.</p> <p>The majority of respondents (89%) thought vaccines given to teenagers should be included in CHIS.</p> <p>More than half (56%) of respondents thought that teenage coverage should be reported via COVER (Cover Of Vaccination Evaluated Rapidly), the system co-ordinated by the Health Protection Agency for collection of childhood immunisation data. 35% of PCTs would prefer to use KC50 returns and 8% would use the HPI website.</p> <p><u>Funding and staffing worries</u></p> <p>Several comments were made of resources and the extra funding required for delivery.</p> <p>Many respondents felt delivery of this vaccine could not be done with existing staffing levels. Clinical and support staff would also be required to identify all educational</p>	<p>Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> NR</p>

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
			<p>establishments/locations.</p> <p><u>Difficulties with a school delivery programme</u></p> <p>Schools were felt the best option for delivery of immunisation to school age children</p> <p>Concern that schools may find three visits difficult when often school nurses only work part time and only during term time.</p> <p>Concern that schools may not welcome the disruption and some schools may fail to cooperate.</p> <p>Concern about the task of preparing and delivering explanations to staff, parents, governors and others.</p> <p>Need for a detailed tracking system will be required, with follow-up vaccination, for girls who miss a routine visit.</p> <p><u>Alternatives to a school delivery programme</u></p> <p>Next to schools GP surgeries were felt appropriate to administer the vaccine.</p> <p>Some PCTs suggested a different venue could be used for delivery of the HPV vaccine e.g. a health centre, or immunisation clinic.</p>	

Evidence table for studies reporting knowledge, attitudes, values and beliefs of Catch-Up Booster

Study details	Research parameters	Population and sample selection	Outcomes and methods of analysis Results	Notes
<p><b>(Bagnall 1995)</b></p> <p><b>Title:</b> School nurses' response to the measles vaccination campaign</p> <p><b>Year:</b> 1995</p> <p><b>Journal:</b> Nursing Times</p> <p><b>Volume:</b> 91</p> <p><b>Quality score:</b> +</p> <p><b>Applicability score:</b> A</p>	<p><b>What was/were the research questions:</b> To identify lessons for future practice, training needs, operational planning and resource management of schools nurses after undertaking a nationwide rubella and measles immunisation programme for five- to 16-year-olds.</p> <p><b>What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):</b> NR</p> <p><b>How were the data collected:</b> A questionnaire using two types of questions to obtain both factual and determine how nurses saw their role in the campaign. Questions centred on strategic planning, operational and resource management.</p>	<p><b>What population were the sample recruited from:</b> School nurses and nurses</p> <p><b>How were they recruited:</b> 250 questionnaires were randomly (not described further) circulated to delegates at a school nursing conference and another 250 were sent by post to nurses randomly selected thought-out England (no further information).</p> <p><b>How many participants were recruited:</b> 288 (57.6%) returned questionnaires.</p> <p><b>Were there specific exclusion criteria:</b> NR</p> <p><b>Were there specific inclusion criteria:</b> NR</p>	<p><b>Brief description of method and process of analysis:</b> Both questionnaires were identical in content. Information was presented as percentages and information from participants.</p> <p><b>Key themes (with illustrative quotes if available) relevant to this review:</b> 288 questionnaires were returned (57.6%) 92% of nurses had found the campaign a challenge and stimulating. The timing of the campaign was not ideal for school nurses with the details coinciding with the beginning to the school holidays, a time when most school nurses do not work. 75% felt confident in undertaking immunisations, however a few who did not have access to training admitted to lacking confidence. 95% found the campaign tiring and many put in extra time that was not remunerated. The campaign for many meant that routine work was put to one side, resulting in a large backlog of work when it finished, only a few reported receiving assistance to reducing this workload. Those that worked within a team structure felt more confident and enjoyed the camaraderie. 96% enjoyed working in a team.</p>	<p><b>Limitations identified by author:</b> None</p> <p><b>Limitations identified by review team:</b> Prospective of the researcher(s) not reported.  Questions asked in the survey not reported.  Response rate 57.6%</p> <p><b>Evidence gaps and/or recommendations for future research:</b> Studies exploring broader populations and settings</p> <p><b>Source of funding:</b> NR</p>

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