

Vaccination Programs: Client Reminder and Recall Systems

Summary Evidence Table (1997–2007)

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Armstrong 1999 (1996)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (3)</p> <p>Outcome Measurement: Adults 65 yrs + Outpatients Influenza</p>	<p>Location: USA; Philadelphia, PA</p> <p>Intervention: Client reminder/recall + client education (mailed brochure with revised content)</p> <p>Comparison: Client reminder/recall -mailed postcard</p>	<p>University primary care sites</p> <p>Clients aged 65 years or older from study primary care sites N eligible: 8,596</p> <p>Random assignment to condition with subsample selected for evaluation</p> <table border="0"> <thead> <tr> <th></th> <th><u>N assigned</u></th> <th><u>N sampled</u></th> </tr> </thead> <tbody> <tr> <td>CRR+CE</td> <td>390</td> <td>229 (59%)</td> </tr> <tr> <td>CRR</td> <td>5000 (350)</td> <td>202 (58%)</td> </tr> </tbody> </table>		<u>N assigned</u>	<u>N sampled</u>	CRR+CE	390	229 (59%)	CRR	5000 (350)	202 (58%)	Client self-reported receipt of influenza vaccine (that season)	<p><u>Comparison</u></p> <p>56.9%</p>	<p><u>Intervention</u></p> <p>66.4%</p>	<p>9.5 pct pts (p=0.04) (95%CI 0.3, 18.7) Relative change (16.7%)</p>	1 flu season
	<u>N assigned</u>	<u>N sampled</u>														
CRR+CE	390	229 (59%)														
CRR	5000 (350)	202 (58%)														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Arthur 2002 (2000)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (4)</p> <p>Outcome Measurement: Adults 75 yrs + Outpatients Influenza</p>	<p>Location: UK; Melton Mowbray</p> <p>Intervention: Home visit (part of health check) with provision of vaccination (advance letter borderline Client Reminder/Recall</p> <p>Comparison: Client reminder/recall -mailed personal letter</p>	<p>Study general practice</p> <p>All clients aged 75 years and older who were free-living and registered with the study practice</p> <p>Random assignment (households)</p> <table border="1" data-bbox="548 521 989 618"> <thead> <tr> <th><u>Group</u></th> <th><u>N assigned</u></th> <th><u>N analyses</u></th> </tr> </thead> <tbody> <tr> <td>Home visit</td> <td>680</td> <td>680</td> </tr> <tr> <td>CRR-letter</td> <td>1372</td> <td>1372</td> </tr> </tbody> </table>	<u>Group</u>	<u>N assigned</u>	<u>N analyses</u>	Home visit	680	680	CRR-letter	1372	1372	<p>Note: Study provides comparison of home visit versus client reminder/recall.</p> <p>Receipt of influenza vaccine (that season-ending Dec 31,2000)</p> <p>Note: Study provides sufficient data to estimate 1999-2000 change in vaccination among clients in the CRR arm</p>	<p><u>CRR</u> 67.9%</p> <p><u>Pre CRR</u> 46.7%</p>	<p><u>Home visit</u> 74.3%</p> <p><u>Post CRR</u> 67.9%</p>	<p>Home visit over CRR 6.4 pct pts (p=0.003) (95% CI 2.2, 10.4)</p> <p>CRR pre-post change 21.2 pct pts (95%CI 17.6, 21.8) Relative change (45%)</p>	<p>1 flu season</p>
<u>Group</u>	<u>N assigned</u>	<u>N analyses</u>														
Home visit	680	680														
CRR-letter	1372	1372														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Clayton 1999 (1997 influenza season)</p> <p>Design suitability (design): Greatest (iRCT)</p> <p>Quality of execution (# of Limitations): Fair (4)</p> <p>Outcome Measurement: Adults 65 yrs + Outpatients Influenza</p>	<p>Location: USA, Northeast region</p> <p>Intervention: Client reminder postcard + client education (small media) + provider education</p> <p>Comparison: Client education + provider education</p>	<p>Group model health centers of Kaiser Permanente-Northeast</p> <p>Adults aged 65 years or older who had a record of receiving the influenza vaccine in the previous year (1996)</p> <p>Random assignment</p> <table border="1" data-bbox="548 553 989 651"> <thead> <tr> <th><u>Group</u></th> <th><u>N enrolled</u></th> <th><u>N analyses</u></th> </tr> </thead> <tbody> <tr> <td>Inter</td> <td>2631</td> <td>2631</td> </tr> <tr> <td>Comp</td> <td>2647</td> <td>2647</td> </tr> </tbody> </table>	<u>Group</u>	<u>N enrolled</u>	<u>N analyses</u>	Inter	2631	2631	Comp	2647	2647	<p>Influenza vaccination coverage rates of study clients for the 1997 flu season</p> <p>Inter</p> <p>Comp</p>	<p><u>1996</u></p> <p>(100%)</p> <p>(100%)</p>	<p><u>1997</u></p> <p>78.6%</p> <p>77.2%</p> <p>p=0.222</p>	<p>1.4 pct pts (95% CI -0.8, 3.6)</p> <p>Relative change (1.8%)</p>	<p>1 flu season</p>
<u>Group</u>	<u>N enrolled</u>	<u>N analyses</u>														
Inter	2631	2631														
Comp	2647	2647														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time						
<p>Author & year (study period): Daley 2004b (2000)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair</p> <p>Outcome Measurement: Children not up-to-date Outpatients Childhood series</p>	<p>Location: USA; Denver, Colorado</p> <p>Intervention: Client reminder/recall mailed postcard and telephone (following a QI project)</p> <p>Comparison: Usual care following QI project</p> <p>QI effort (provider reminders + provider education)</p>	<p>Study Pediatric Primary Care clinic</p> <p>Children 5-17 months who were not up-to-date</p> <table border="0"> <tr> <td><u>Group</u></td> <td><u>N assigned</u></td> </tr> <tr> <td>Client reminder/recall+ provider reminder + provider education</td> <td>205</td> </tr> <tr> <td>Provider reminder+Provider education</td> <td>215</td> </tr> </table>	<u>Group</u>	<u>N assigned</u>	Client reminder/recall+ provider reminder + provider education	205	Provider reminder+Provider education	215	<p>Up-to-date vaccination status for study children age 5-17m of age (note: not up to date at time of assignment)</p> <p>In 2 month follow-up a client reminder postcard did not add to the interventions (PR+PE) adopted as part of a clinic Quality Improvement effort</p>	<p><u>Comparison</u> 16%</p>	<p><u>Intervention</u> 17%</p>	<p>1 pct pt (Not significant) (95%CI -6.1, 8.1) Relative change (6.2%)</p>	<p>2 months</p>
<u>Group</u>	<u>N assigned</u>												
Client reminder/recall+ provider reminder + provider education	205												
Provider reminder+Provider education	215												

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time															
<p>Author & year (study period): Dini 2000 (1993-1996)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (2)</p> <p>Outcome Measurement: Children Outpatients Vaccination series at 24m of age Computer generated reminders by telephone and mailed recall letters</p>	<p>Location: USA; Denver, CO</p> <p>Intervention: Computer vaccination database employed</p> <ul style="list-style-type: none"> Telephone and letter reminder/recall + database Telephone reminder + database Letter recall + database <p>Comparison: Usual care + database</p>	<p>Four public health clinics utilizing the vaccination database</p> <p>Households of children listed in the vaccination database -Children 60-90 days of age</p> <table border="1"> <thead> <tr> <th>Group</th> <th>N enrolled</th> <th>N receipt</th> </tr> </thead> <tbody> <tr> <td>Telephone+ letter</td> <td>215</td> <td>177</td> </tr> <tr> <td>Telephone only</td> <td>217</td> <td>189</td> </tr> <tr> <td>Letter</td> <td>216</td> <td>183</td> </tr> <tr> <td>Comp</td> <td>213</td> <td>186</td> </tr> </tbody> </table> <p>Overall loss to f/u: 126 (14.6%) of 861 enrolled</p>	Group	N enrolled	N receipt	Telephone+ letter	215	177	Telephone only	217	189	Letter	216	183	Comp	213	186	<p>Vaccination series completion at 24 months of age</p> <p>Overall (Any CRR)</p> <p>Telephone + letter</p> <p>Telephone only</p> <p>Letter only</p> <p>Intention to treat analyses (all compared to the usual care group)</p>	<p><u>Comparison</u></p> <p>40.9%</p>	<p><u>Intervention</u></p> <p>49.2%</p>	<p>8.3 pct pts (95%CI 0.7, 15.9)</p> <p>Relative change (20.3%)</p> <p>Rate ratio=1.21 (1.01,1.44)</p> <p>9.3 pct pts (NS)</p> <p>8.4 pct pts (NS)</p> <p>7.3 pct pts (NS)</p>	<p>22 months</p>
			Group	N enrolled	N receipt																	
			Telephone+ letter	215	177																	
			Telephone only	217	189																	
Letter	216	183																				
Comp	213	186																				
40.9%	50.2%	9.3 pct pts (NS)																				
40.9%	49.3%	8.4 pct pts (NS)																				
40.9%	48.2%	7.3 pct pts (NS)																				

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time												
<p>Author & year (study period): Franzini 2000 (1997-1998)</p> <p>Design suitability (design): Greatest (group randomized trial)</p> <p>Outcome Measurement: Children Outpatient DTaP vaccine</p>	<p>Location: USA; Houston ,Texas</p> <p>Intervention: Client reminder/recall (telephone autodial)</p> <p>Client reminder/recall (mailed postcard)</p> <p>Comparison: Usual care</p>	<p>Participating private practices in Houston/Harris County (N=6)</p> <p>Clinics were randomly assigned to condition</p> <p>Eligible children <12 months of age of study clinics</p> <table border="1" data-bbox="548 521 989 654"> <thead> <tr> <th><u>Group</u></th> <th><u>N clinic</u></th> <th><u>N clients</u></th> </tr> </thead> <tbody> <tr> <td>CRR-phone</td> <td>NR</td> <td>314</td> </tr> <tr> <td>CRR-postcard</td> <td>NR</td> <td>395</td> </tr> <tr> <td>Comp</td> <td>NR</td> <td>429</td> </tr> </tbody> </table>	<u>Group</u>	<u>N clinic</u>	<u>N clients</u>	CRR-phone	NR	314	CRR-postcard	NR	395	Comp	NR	429	<p>Proportion of study children vaccinated with DTaP over the period of study</p> <p>Overall (any CRR)</p> <p>Telephone-autodial</p> <p>Postcards</p> <p>Note: Rate of return visits was significantly higher in CRR arms</p>	<p><u>Comparison</u> 63.6%</p> <p>63.6%</p> <p>63.6%</p>	<p><u>Intervention</u> 82.5%</p> <p>86.0%</p> <p>79.7%</p>	<p>18.9 pct pts (95%CI 13.6, 24.2) Relative change (29.7%)</p> <p>22.4 pct pts</p> <p>16.1 pct pts</p> <p>Rate of return visits 23.7 pct pts</p>	<p>NR (30 days post appt)</p>
<u>Group</u>	<u>N clinic</u>	<u>N clients</u>																	
CRR-phone	NR	314																	
CRR-postcard	NR	395																	
Comp	NR	429																	

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time
<p>Author & year (study period): Gil 2000 (1997-1999)</p> <p>Design suitability (design): Moderate (retrospective cohort)</p> <p>Outcome Measurement: Adults 65 yrs + Outpatient Influenza</p>	<p>Location: USA; North Wilmington, Delaware</p> <p>Intervention: Provider reminder (computer prompt in patient electronic medical record) + client reminder (postcard sent in October)</p> <p>Comparison: Pre-Post</p>	<p>Study Family Medicine group practice: N=1</p> <p>Patients 65 years and older who had visits before 9/97 and after 1/99</p> <p>N=344 evaluated over two influenza seasons</p>	<p>Proportion of eligible patients who received an influenza vaccination (n=344)</p>	<p><u>1997-pre</u> 50.4%</p>	<p><u>1998-post</u> 61.6%</p>	<p>11.2 pct points (p<0.001) (95%CI 4, 19) Relative change (22%)</p>	<p>2 years</p>

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time								
<p>Author & year (study period): Hambidge 2004 (1998-2000)</p> <p>Design suitability (design): Greatest (group randomized control trial)</p> <p>Outcome Measurement: Children (infants) Outpatients Pediatric Immunizations</p>	<p>Location: USA; Denver CO</p> <p>Intervention: Provider reminders (medical chart marked if behind on immunizations or well child visits) + provider assessment & feedback (monthly cycles) + provider education + client reminder/recall (postcard reminder) + registry/database</p> <p>Comparison: Usual care</p>	<p>School-based clinics within the Denver Health Medical Center: n=11</p> <p>Patients born at study medical center between July 1, 1998 and June 1999.</p> <table border="1" data-bbox="548 521 989 654"> <thead> <tr> <th><u>Group</u></th> <th><u>N patients</u></th> </tr> </thead> <tbody> <tr> <td>1. Imm. Arm (4 clinics)</td> <td>1030</td> </tr> <tr> <td>2. WCV Arm (3 clinics)</td> <td>475</td> </tr> <tr> <td>3. Control (4 clinics)</td> <td>1160</td> </tr> </tbody> </table>	<u>Group</u>	<u>N patients</u>	1. Imm. Arm (4 clinics)	1030	2. WCV Arm (3 clinics)	475	3. Control (4 clinics)	1160	<p>% Up to date at 12 months</p> <p>Results provided here reflect the immunization study arm compared to the comparison arm</p>	<p>Comparison: 71%</p>	<p>Intervention: 76%</p>	<p>5 pct pts (95% CI 1.3, 8.7) Relative (7%)</p> <p>Multivariable analysis: Up to date Risk ratio 1.09 (95%CI 0.97, 1.20)</p>	<p>12 months</p>
<u>Group</u>	<u>N patients</u>														
1. Imm. Arm (4 clinics)	1030														
2. WCV Arm (3 clinics)	475														
3. Control (4 clinics)	1160														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time						
<p>Author & year (study period): Hawe 1998 (1988-1989)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (2)</p> <p>Outcome Measurement: Children Outpatients Measles vaccine</p>	<p>Location: Australia; Ballarat</p> <p>Intervention: Client reminder/recall with content based on Health Belief Model</p> <p>Comparison: CRR with standard content</p>	<p>Cohort of children born Aug 24, 1987-Feb 28, 1988 enrolled and randomly assigned to condition</p> <table border="1" data-bbox="548 391 989 488"> <thead> <tr> <th>Group</th> <th>N</th> </tr> </thead> <tbody> <tr> <td>CRR-Health Belief Model</td> <td>124</td> </tr> <tr> <td>CRR-standard content</td> <td>135</td> </tr> </tbody> </table> <p>Note: Both arms received CRR so this study is not a primary evaluation of CRR effectiveness</p>	Group	N	CRR-Health Belief Model	124	CRR-standard content	135	<p>Measles vaccination at 15 months of age</p>		<p>I: 79% C: 67%</p>	<p>12 pct pts (95%CI 2, 23) Relative change (17.9%)</p> <p>Additional information on effectiveness by content of the reminder</p>	<p>NR (15 m of age)</p>
Group	N												
CRR-Health Belief Model	124												
CRR-standard content	135												

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time													
<p>Author & year (study period): Hellerstedt 1999 (1995-1996)</p> <p>Design suitability (design): Moderate (retrospective cohort)</p> <p>Quality of execution (# of Limitations): Fair (3)</p> <p>Outcome Measurement: Children (infants) Outpatients (community) Childhood series</p>	<p>Location: USA; 13 counties in Minnesota</p> <p>Intervention: Communities Caring for Children (CCC) tracking and outreach (database + client reminder/ recall) + client education + community-wide education</p> <p>Comparison: Not in CCC (exposed to community-wide education)</p>	<p>Counties implementing CCC over the period of study</p> <p>Clients (mothers/infants) in study counties born in the period May-Dec 1995</p> <p>N eligible: 1181</p> <table border="0"> <tr> <td>Enrolled in CCC</td> <td>776</td> </tr> <tr> <td>Not enrolled in CCC</td> <td>405</td> </tr> </table> <p>Outcomes were measured in a telephone survey subsample</p> <table border="0"> <tr> <td>Group</td> <td><u>N eligible</u></td> <td><u>N analyses</u></td> </tr> <tr> <td>CCC enrolled</td> <td>259</td> <td>163 (63%)</td> </tr> <tr> <td>Not enrolled</td> <td>255</td> <td>135 (53%)</td> </tr> </table>	Enrolled in CCC	776	Not enrolled in CCC	405	Group	<u>N eligible</u>	<u>N analyses</u>	CCC enrolled	259	163 (63%)	Not enrolled	255	135 (53%)	<p>Immunization compliance (study defined table 4 pg 55) based on client immunization cards</p> <p>Infant received two each of DTP, HBV, Hib, and polio (study criteria #2)</p> <p>Logistic regression analysis</p>	<p><u>Not in CCC</u> 52.6%</p>	<p><u>In CCC</u> 65.6%</p>	<p>13 pct pts (95%CI 1.9, 24.1) Relative change (24.7%)</p> <p>Adj OR = 1.8 (95%CI 1.1, 3.0)</p>	<p>NR</p>
Enrolled in CCC	776																			
Not enrolled in CCC	405																			
Group	<u>N eligible</u>	<u>N analyses</u>																		
CCC enrolled	259	163 (63%)																		
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Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Hoekstra 1999 (1996-1997)</p> <p>Design suitability (design): Greatest (individual, randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (4)</p> <p>Outcome Measurement: Children WIC Outpatients Childhood vaccinations (age appropriate 12m)</p>	<p>Location: USA, Chicago, IL</p> <p>Intervention: Client reminder/recall (telephone + letter) + WIC program with monthly voucher pickup incentive</p> <p>Comparison: WIC program with monthly voucher pickup incentive</p>	<p>A selected WIC site in Chicago</p> <p>Inner-city infants enrolled in WIC program (May 1, 1996)</p> <p>Random assignment at 6m of age</p> <table border="1" data-bbox="548 487 989 617"> <thead> <tr> <th>WIC group</th> <th>N assigned</th> <th>N analyses</th> </tr> </thead> <tbody> <tr> <td>CRR+MVP</td> <td>324</td> <td>NR (99%)</td> </tr> <tr> <td>MVP</td> <td>241</td> <td>R (99%)</td> </tr> </tbody> </table> <p>12m f/u of 560 (99%) of 565</p>	WIC group	N assigned	N analyses	CRR+MVP	324	NR (99%)	MVP	241	R (99%)	<p>Age appropriate vaccination status at 12m of age</p>	<p>I: 75% C: 77%</p>	<p>I: 80% C: 75%</p>	<p>3 pct pts (95%CI -3.7, 9.7) Relative change (4%)</p>	<p>6 months</p>
WIC group	N assigned	N analyses														
CRR+MVP	324	NR (99%)														
MVP	241	R (99%)														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time												
<p>Author & year (study period): Hogg 1998 (1991-1992)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair</p> <p>Outcome Measurement: Families (adults, children) Outpatients Various indicated vaccinations</p>	<p>Location: Canada; rural Quebec</p> <p>Intervention: Client reminders (for appropriate family preventive services - personalized letter arm) + [existing provider reminders]</p> <p>Comparison: Usual care (computer records with provider reminders for preventive services)</p>	<p>Study Family Medical Center</p> <p>Patients of the study medical center (assigned households)</p> <p>N eligible 8770 N=719 families randomly selected, enrolled and randomly allocated to condition</p> <table border="1" data-bbox="548 553 989 683"> <thead> <tr> <th><u>Condition</u></th> <th><u>N family</u></th> <th><u>N patients</u></th> </tr> </thead> <tbody> <tr> <td>CRR +PR</td> <td>204</td> <td>613</td> </tr> <tr> <td>(CE +PR)</td> <td>252</td> <td>676</td> </tr> <tr> <td>UC +PR</td> <td>263</td> <td>682</td> </tr> </tbody> </table>	<u>Condition</u>	<u>N family</u>	<u>N patients</u>	CRR +PR	204	613	(CE +PR)	252	676	UC +PR	263	682	<p>Interval immunization with recommended vaccine by one or more family members</p> <ul style="list-style-type: none"> -Adult tetanus -Influenza (age 65yrs +) -Influenza (chronic conditions) -MMR -HiB -DPT TOPV (all) -MMR booster <p>Narrative summary for these results f/u of study patients was 98%</p>	<p><u>Range</u> 0% (MMR) to 19.1% (influenza)</p>	<p><u>Range</u> 0% (MMR) to 20% (influenza)</p>	<p>Range of change estimates 0 pct pts (MMR) to 5.2 pct pts (DPT TOPV)</p> <p>Narrative summary Small changes that were not statistically significant</p>	<p>1 year</p>
<u>Condition</u>	<u>N family</u>	<u>N patients</u>																	
CRR +PR	204	613																	
(CE +PR)	252	676																	
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Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Honkanen 1997 (1993 influenza season)</p> <p>Design suitability (design): Greatest (other design with a concurrent comparison group)</p> <p>Quality of execution (# of Limitations): Fair (4)</p> <p>Outcome Measurement: Adults 65 yrs + Outpatients Influenza</p>	<p>Location: Finland, northern districts</p> <p>Intervention: Client reminders-mailed + reduced out-of-pocket costs (free)</p> <p>Comparison: Mass media education (community-wide) + ROPC (free)</p>	<p>All persons 65 years of age or older in study administrative districts in Finland</p> <table border="1" data-bbox="548 391 989 488"> <thead> <tr> <th>Group</th> <th>Districts</th> <th>Population</th> </tr> </thead> <tbody> <tr> <td>Inter</td> <td>8</td> <td>10,019</td> </tr> <tr> <td>Comp</td> <td>20</td> <td>17,564</td> </tr> </tbody> </table> <p>Note: 1993 flu season comparison of two intervention regions is reported here</p> <p>Numbers of adults vaccinated was not reported</p>	Group	Districts	Population	Inter	8	10,019	Comp	20	17,564	<p>Mean influenza vaccination coverage of district health centers</p>	<p><u>1992</u> I: NA C: 49.5%</p>	<p><u>1993</u> I: 82.4% C: 51.4%</p>	<p>31 pct pts Relative change (62%) (95%CI: unable to calculate)</p>	<p>1 flu season</p>
Group	Districts	Population														
Inter	8	10,019														
Comp	20	17,564														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Hull 2002 (2000)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair</p> <p>Outcome Measurement: Adults 65-74yrs Outpatients Influenza</p>	<p>Location: UK; London and Essex</p> <p>Intervention: Client reminder/recall-telephone</p> <p>Comparison: Usual care</p>	<p>Study research practices in East London and Essex: N=3</p> <p>Clients aged 65-74 yrs of age of the study practices N eligible = 1820 Random assignment by household</p> <table border="1" data-bbox="548 487 989 584"> <thead> <tr> <th>Group</th> <th>N assigned</th> <th>N analyses</th> </tr> </thead> <tbody> <tr> <td>Inter</td> <td>660</td> <td>660</td> </tr> <tr> <td>Comp</td> <td>658</td> <td>658</td> </tr> </tbody> </table>	Group	N assigned	N analyses	Inter	660	660	Comp	658	658	<p>Client receipt of influenza vaccination</p> <p>Logistic regression adjusting for practice site and correlation by household</p>	<p><u>Comparison</u> 44%</p>	<p><u>Intervention</u> 50%</p>	<p>5.9 pct pts (95%CI 0.5, 11.3) Relative change (13.6%)</p> <p>Adj OR=1.27 (95%CI 1.02, 1.58)</p>	<p>1 flu season</p>
Group	N assigned	N analyses														
Inter	660	660														
Comp	658	658														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time															
<p>Author & year (study period): Irigoyen 2000 (1997)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (3)</p> <p>Outcome Measurement: Children 4-18m Outpatients Childhood series</p>	<p>Location: USA; NY, NY</p> <p>Intervention: Client reminder/recall</p> <ul style="list-style-type: none"> • mailed postcards • telephone • Postcards + telephone <p>Comparison: Usual care</p>	<p>Study hospital-affiliated pediatric clinic serving low-income population in New York City</p> <p>Children of study pediatric clinic Systematically assigned to condition</p> <table border="1" data-bbox="548 487 989 649"> <thead> <tr> <th>Group</th> <th>N assigned</th> <th>N analyses</th> </tr> </thead> <tbody> <tr> <td>Postcard</td> <td>314</td> <td>314</td> </tr> <tr> <td>Phone</td> <td>307</td> <td>307</td> </tr> <tr> <td>Card+Phone</td> <td>306</td> <td>306</td> </tr> <tr> <td>Comparison</td> <td>346</td> <td>346</td> </tr> </tbody> </table>	Group	N assigned	N analyses	Postcard	314	314	Phone	307	307	Card+Phone	306	306	Comparison	346	346	<p>Up-to-date vaccination coverage rates for study children (age appropriate)</p> <p>Postcard + Telephone</p> <p>Kept scheduled appointment with provider</p> <p>Postcard + Telephone Overall kept appointment rate increased significantly in the reminder arms (p=0.003) but was not associated with increase in age appropriate UTD</p>	<p><u>Comparison</u></p> <p>82.4%</p> <p>65.0%</p>	<p><u>Intervention</u></p> <p>85.6%</p> <p>76.5%</p>	<p>3.2 pct pts (95% CI -2.4, 8.8) Relative change (3.9%)</p> <p>Overall vaccination coverage rates averaged 84.1% and did not differ significantly by condition</p> <p>11.5 pct pts</p>	<p>NR</p>
Group	N assigned	N analyses																				
Postcard	314	314																				
Phone	307	307																				
Card+Phone	306	306																				
Comparison	346	346																				

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time								
<p>Author & year (study period): Irogoyen 2006 (2001)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (3)</p> <p>Outcome Measurement: Children Outpatients Childhood series</p>	<p>Location: USA, New York, NY</p> <p>Intervention: IIS (registry) + client reminder/recall registry (continuous)</p> <p>IIS (registry) + Client Reminder//recall + (limited-up to 3)</p> <p>Comparison: IIS (registry) + usual care</p>	<p>Study health care network in New York City</p> <p>Random sample of pediatric patients (6wks to 15m of age) who were registry-identified as due or late for immunization</p> <p>N eligible: 13,886 children 12% random sample N=1662 children</p> <table border="1" data-bbox="548 617 989 755"> <thead> <tr> <th>Group</th> <th>N enrolled</th> </tr> </thead> <tbody> <tr> <td>CRR-Continuous</td> <td>549</td> </tr> <tr> <td>CRR-Limited</td> <td>552</td> </tr> <tr> <td>Usual Care</td> <td>561</td> </tr> </tbody> </table>	Group	N enrolled	CRR-Continuous	549	CRR-Limited	552	Usual Care	561	<p>Up to date for the 4:3:1:3 series</p> <p>Any CRR (consolidated)</p> <p>CRR-continuous</p> <p>CRR-limited</p> <p>Usual Care</p> <p>Note: additional vaccination outcomes were reported (receipt of any vaccination in the 6m post; up-to-date for DTaP). Baseline measures provided were UTD for 4:3:1:3</p>	<p>I: 49.8% C: 48.1%</p> <p>Pre 49.5%</p> <p>50.2%</p> <p>48.1%</p>	<p>I: 43.0% C: 39.2%</p> <p>Post 44.1%</p> <p>42.0%</p> <p>39.2%</p>	<p>2.1 pct pts (95% CI -2.9, 7.1) Relative change (4.4%)</p> <p>Continuous: 3.5 pct pts (95% CI: -2.3, 9.3)</p> <p>Limited: 0.7 pct pts (95%CI: -5.1, 6.5) Usual Care: reference</p> <p>In multi-variate analyses reminders had no independent effect on UTD at 3m and 6m</p>	<p>6 months</p>
Group	N enrolled														
CRR-Continuous	549														
CRR-Limited	552														
Usual Care	561														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time																
<p>Author & year (study period): Kellerman 2000 (1996)</p> <p>Design suitability (design): Moderate (interrupted time series)</p> <p>Quality of execution (# of Limitations): Fair (4-5)</p> <p>Outcome Measurement: Adults 65 years + Outpatients Influenza</p>	<p>Location: USA, Salina, Kansas</p> <p>Intervention: Client reminder/recall –postcard with telephone f/u of a subset of nonresponders</p> <p>Comparison: Pre-Post (1994 and 1995 coverage rates)</p>	<p>Study Family Practice teaching facility</p> <p>Adult patients aged 65 years or older of study practice</p> <table border="1" data-bbox="548 456 989 586"> <thead> <tr> <th>Year</th> <th>N eligible</th> <th>N analyses</th> </tr> </thead> <tbody> <tr> <td>1996 cohort</td> <td>475</td> <td>475</td> </tr> <tr> <td>1995 cohort</td> <td>NR</td> <td>NR</td> </tr> <tr> <td>1994 cohort</td> <td>NR</td> <td>NR</td> </tr> </tbody> </table>	Year	N eligible	N analyses	1996 cohort	475	475	1995 cohort	NR	NR	1994 cohort	NR	NR	<p>Receipt of influenza vaccination from the facility in medical record</p> <p>Note: Authors noted that vaccination rates for the subset of postcard nonresponders did not differ by provision of f/u telephone call or no f/u</p>	<table border="1" data-bbox="1203 289 1430 354"> <thead> <tr> <th>1994</th> <th>1995</th> </tr> </thead> <tbody> <tr> <td>18%</td> <td>18%</td> </tr> </tbody> </table>	1994	1995	18%	18%	<p><u>1996-post</u> 28%</p>	<p>10 pct pts (p<0.001) (unable to est. 95%CI) Relative change (55.6%)</p>	<p>1 flu season</p>
Year	N eligible	N analyses																					
1996 cohort	475	475																					
1995 cohort	NR	NR																					
1994 cohort	NR	NR																					
1994	1995																						
18%	18%																						

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Kempe 2001 (Jan-July 1999)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Outcome Measurement: Children Outpatient Childhood series UTD</p>	<p>Location: USA; Denver, CO</p> <p>Intervention: Client reminder/recall (telephone and postcard) + vaccination database</p> <p>Comparison: Usual care + vaccination database</p>	<p>Resident training outpatient clinic of Denver Children’s Hospital</p> <p>Children age 5-17 months (urban, low-income families)</p> <table border="1" data-bbox="548 423 989 521"> <thead> <tr> <th>Group</th> <th>N enrolled</th> <th>Analyses</th> </tr> </thead> <tbody> <tr> <td>Intervention</td> <td>294</td> <td>292</td> </tr> <tr> <td>Comparison</td> <td>309</td> <td>304</td> </tr> </tbody> </table> <p>Note: 30% of study sample could not be reached by the reminder intervention</p>	Group	N enrolled	Analyses	Intervention	294	292	Comparison	309	304	<p>Vaccination status (up to date) of study children 2 months after the client reminder/recall notifications</p> <p>Subset of children at age 7m</p> <p>Subset of children at age12m</p> <p>Subset of children at age19m</p> <p>Note: Unable to calculate overall UTD status for this study sample</p>	<p><u>Comparison</u></p> <p>28%</p> <p>39%</p> <p>16%</p>	<p><u>Intervention</u></p> <p>24%</p> <p>51%</p> <p>16%</p>	<p><u>Subset outcomes</u></p> <p>-4 pct pts (NS) Relative chg (-14.2%)</p> <p>12 pct pts (p=0.07) Relative chg (30.8%)</p> <p>0 pct pts (NS) Relative chg (0%)</p>	<p>2 months</p>
Group	N enrolled	Analyses														
Intervention	294	292														
Comparison	309	304														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Kempe 2005 (2003-2004)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (3)</p> <p>Outcome Measurement: Children Outpatients Influenza</p>	<p>Location: USA; Denver, Colorado</p> <p>Intervention: Client reminder/recall + IIS (registry) + expanding access in health care settings</p> <p>Comparison: Usual care+ IIS (registry) + expanding access in healthcare settings</p>	<p>Study pediatric practices with a common registry (database): n=5</p> <p>Infant clients (6-21m of age) of the study practices</p> <p>N eligible = 5704</p> <p>Random assignment to condition</p> <table border="1" data-bbox="548 521 989 618"> <thead> <tr> <th><u>Group</u></th> <th><u>N enrolled</u></th> <th><u>N analyses</u></th> </tr> </thead> <tbody> <tr> <td>Inter</td> <td>2595</td> <td>2595</td> </tr> <tr> <td>Comp</td> <td>2598</td> <td>2598</td> </tr> </tbody> </table>	<u>Group</u>	<u>N enrolled</u>	<u>N analyses</u>	Inter	2595	2595	Comp	2598	2598	<p>Receipt of ≥ 1 influenza immunization</p> <p>Authors note that intense media coverage of influenza outbreak in the region (after Nov 15) probably contributed to coverage rates observed in this study (both arms)</p>	<p><u>Comparison</u> 58%</p>	<p><u>Intervention</u> 62.4%</p>	<p>4.4 pct pts (p=0.001) [95%CI: 1.7, 7.1] Relative change (6.9%)</p>	<p>5 months</p>
<u>Group</u>	<u>N enrolled</u>	<u>N analyses</u>														
Inter	2595	2595														
Comp	2598	2598														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): LeBaron 1998 –clinic study (1992-1993)</p> <p>Design suitability (design): Greatest (group nonrandomized trial)</p> <p>Quality of execution (# of Limitations): Fair</p> <p>Outcome Measurement: Children Outpatients Childhood series</p>	<p>Location: USA; Fulton county (Atlanta), GA</p> <p>Intervention: Client reminder/recall (outreach with monthly assessment and CRR by mail, phone, and/or home visit)</p> <p>Comparison: Usual care</p> <p>Note: Background community-wide education campaign</p>	<p>Public health clinics in the study county: N=4 Intervention: 2 clinics Comparison: 2 clinics</p> <p>Pediatric patients (3m to 59m of age) of the study public clinics</p> <table border="1" data-bbox="548 521 989 618"> <thead> <tr> <th><u>Group</u></th> <th><u>N pre</u></th> <th><u>N post</u></th> </tr> </thead> <tbody> <tr> <td>Intervention</td> <td>204</td> <td>170</td> </tr> <tr> <td>Comparison</td> <td>157</td> <td>150</td> </tr> </tbody> </table>	<u>Group</u>	<u>N pre</u>	<u>N post</u>	Intervention	204	170	Comparison	157	150	<p>Changes in series completion rate among study patients</p> <p>Note: Paper also evaluated a concurrent community-wide campaign</p>	<p><u>Pre</u> I: 43% C: 52%</p>	<p><u>Post</u> I: 58% C: 52%</p>	<p><u>Overall change</u> 15 pct points (p=0.046) (95%CI 4.1, 25.9) Relative change (28.8%)</p>	<p>1 year</p>
<u>Group</u>	<u>N pre</u>	<u>N post</u>														
Intervention	204	170														
Comparison	157	150														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time															
<p>Author & year (study period): LeBaron 2004 (1996-1998)</p> <p>Design suitability (design): Greatest (Individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair</p> <p>Outcome Measurement: Children Outpatients community-wide Childhood series</p>	<p>Location: USA; Fulton county (Atlanta), GA</p> <p>Intervention: IIS (registry) + client reminder/recall (3arms)</p> <ul style="list-style-type: none"> Telephone autodialer with postcard backup Outreach (assessment with staged telephone, postcard, home visit) Telephone autodialer with outreach backup <p>Comparison: IIS (registry) + usual care</p>	<p>Cohort of pediatric patients in the MATCH IIS (registry) born July 1995-Aug 1996 N eligible =3050</p> <p>Random assignment to condition</p> <table border="1" data-bbox="554 492 982 654"> <thead> <tr> <th>Group</th> <th>N assigned</th> <th>N analyses</th> </tr> </thead> <tbody> <tr> <td>Autodial</td> <td>763</td> <td>763</td> </tr> <tr> <td>Outreach</td> <td>760</td> <td>760</td> </tr> <tr> <td>Autod-Outrch</td> <td>764</td> <td>764</td> </tr> <tr> <td>Comparison</td> <td>763</td> <td>763</td> </tr> </tbody> </table>	Group	N assigned	N analyses	Autodial	763	763	Outreach	760	760	Autod-Outrch	764	764	Comparison	763	763	<p>Series completion rates 4:3:1:3 (with 1m grace period) at 24m of age</p> <p>Autodialer with mail backup</p> <p>Autodialer with Outreach backup</p> <p>Note: We considered the Autodial arm in our CRR-alone review and the Autodial + Outreach backup in our CRR-multicomponent review</p>	<p><u>At start</u></p> <p>I: 53% C: 52%</p> <p>I: 52% C: 52%</p>	<p><u>At 24m age</u></p> <p>I: 40% C: 34%</p> <p>I: 38% C: 34%</p>	<p>5.0 pct points (p<0.05) (95%CI 0.2, 9.8)</p> <p>4.0 pct points (NS) (95%CI -0.8, 8.8)</p>	<p>2 years</p>
Group	N assigned	N analyses																				
Autodial	763	763																				
Outreach	760	760																				
Autod-Outrch	764	764																				
Comparison	763	763																				

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time																		
<p>Author & year (study period): Lieu 1998 (1996-1997)</p> <p>Design suitability (design): Greatest (Individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair</p> <p>Outcome Measurement: Children Outpatients (managed care) Childhood vaccines (any indicated)</p>	<p>Location: USA; Northern California</p> <p>Intervention: Registry (regional database) + client reminder/recall (4 arms)</p> <ul style="list-style-type: none"> • Telephone autodialer • Mailed letter • Letter then phone • Phone then letter <p>Comparison: Pre cohort (January 1996) Registry (regional database) + usual care</p>	<p>Medical centers of Kaiser Permanente in Northern California:</p> <p>Pediatric clients (20m of age) in the study region during the study period who were identified as underimmunized</p> <table border="1" data-bbox="548 519 989 722"> <thead> <tr> <th>Group</th> <th>N assigned</th> <th>N analyses</th> </tr> </thead> <tbody> <tr> <td>Phone</td> <td>162</td> <td>162</td> </tr> <tr> <td>Letter</td> <td>165</td> <td>165</td> </tr> <tr> <td>Let+Ph</td> <td>154</td> <td>154</td> </tr> <tr> <td>Ph+let</td> <td>167</td> <td>167</td> </tr> <tr> <td>Comp</td> <td>219</td> <td>219</td> </tr> </tbody> </table>	Group	N assigned	N analyses	Phone	162	162	Letter	165	165	Let+Ph	154	154	Ph+let	167	167	Comp	219	219	<p>Receipt of any indicated immunization by the study participant (20 to 24m of age)</p> <p>Any CRR (consolidated arms)</p> <ul style="list-style-type: none"> • Phone • Letter • Letter then Phone • Phone then letter <p>Note: Authors provided up to date 24m results for the 4 intervention arms but not for the comparison cohort. We report “any” vaccine results here</p>	<p><u>Comparison</u> 35.6%</p> <p>(35.6%)</p>	<p><u>Intervention</u> 49.7%</p> <p>43.8%</p> <p>44.2%</p> <p>57.8%</p> <p>53.3%</p>	<p>14.1 pct pts (95%CI 6.7, 21.5) Relative change (39.6%)</p> <p>8.2 pct pts 8.6 pct pts 22.2 pct pts</p> <p>17.7 pct pts</p>	<p>5 months</p>
Group	N assigned	N analyses																							
Phone	162	162																							
Letter	165	165																							
Let+Ph	154	154																							
Ph+let	167	167																							
Comp	219	219																							

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Mason 2000 (1998-1999)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (3)</p> <p>Outcome Measurement: Children Community-wide MMR vaccination</p>	<p>Location: UK, Iechyd Morgannwg, Wales</p> <p>Intervention: IIS (registry) + client reminder/recall-mailed letter + client education</p> <ul style="list-style-type: none"> • mailed leaflet + provider reminder • mailed letter <p>Comparison: IIS (registry) + usual care</p>	<p>Study Health Authority in Wales</p> <p>Underimmunized pediatric clients (at 21m of age) of the study Health Authority were enrolled and randomly assigned to condition</p> <table border="1" data-bbox="548 487 989 584"> <thead> <tr> <th>Group</th> <th>N assigned</th> <th>N analyses</th> </tr> </thead> <tbody> <tr> <td>Inter</td> <td>255</td> <td>249 (97%)</td> </tr> <tr> <td>Comp</td> <td>256</td> <td>244 (95%)</td> </tr> </tbody> </table>	Group	N assigned	N analyses	Inter	255	249 (97%)	Comp	256	244 (95%)	<p>Receipt of MMR vaccination between 21m and 24m of age</p>	<p><u>Comparison</u> 6.1%</p>	<p><u>Intervention</u> 7.2%</p>	<p>1.1 pct pts (95%CI -3.3, 5.5) Relative change (18%)</p>	<p>8 months (3m f/u)</p>
Group	N assigned	N analyses														
Inter	255	249 (97%)														
Comp	256	244 (95%)														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time												
<p>Author & year (study period): McCaul 2002 (Not reported)</p> <p>Design suitability (design): Greatest (other design w concurrent comparison)</p> <p>Quality of execution (# of Limitations): Fair (4)</p> <p>Outcome Measurement: Adults (Medicare clients) Community-wide Influenza</p>	<p>Location: USA, North Dakota</p> <p>Intervention: Client reminder/recall (2 arms with different message content)</p> <p>Comparison: Usual care</p>	<p>Selected counties in North Dakota were randomly assigned to condition</p> <table border="1" data-bbox="548 354 989 487"> <thead> <tr> <th>Group</th> <th>N counties</th> <th>N clients</th> </tr> </thead> <tbody> <tr> <td>CRR-action</td> <td>12</td> <td>6057</td> </tr> <tr> <td>CRR-3 types</td> <td>17</td> <td>9780</td> </tr> <tr> <td>Usual care</td> <td>20</td> <td>7896</td> </tr> </tbody> </table>	Group	N counties	N clients	CRR-action	12	6057	CRR-3 types	17	9780	Usual care	20	7896	<p>Receipt of influenza vaccination (Medicare claim)</p> <p>Any CRR (consolidated arms)</p>	<p><u>Comparison</u> 19.6%</p>	<p><u>Intervention</u> 25.7%</p>	<p>6.1 pct pts (95%CI 5.0, 7.2) Relative change(+31.1%)</p>	<p>1 flu season (6m)</p>
Group	N counties	N clients																	
CRR-action	12	6057																	
CRR-3 types	17	9780																	
Usual care	20	7896																	

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time								
<p>Author & year (study period): Morgan 1998 (1996)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (3)</p> <p>Outcome Measurement: Children Outpatient Childhood series (age appropriate)</p>	<p>Location: United Kingdom; South Glamorgan, Wales</p> <p>Intervention: 2 intervention arms Registry + client reminder/recall-letter</p> <p>Registry + provider reminder –telephone call to health visitor</p> <p>Comparison: Registry + usual care</p>	<p>Children followed in the Child Health System (registry) in two birth cohort periods April-Sept 1995 April-Sept 1994</p> <table border="1"> <thead> <tr> <th>Group</th> <th>N</th> </tr> </thead> <tbody> <tr> <td>Registry+CRR</td> <td>159</td> </tr> <tr> <td>Registry + Provider rem</td> <td>153</td> </tr> <tr> <td>Registry+ Usual care</td> <td>139</td> </tr> </tbody> </table>	Group	N	Registry+CRR	159	Registry + Provider rem	153	Registry+ Usual care	139	<p>Proportion of study children completing the primary course of immunizations (two age cohorts)</p> <p>CRR arm</p> <p>Provider Reminder arm</p>	<p><u>Comparison</u> 32.3%</p> <p>32.3%</p>	<p><u>Intervention</u> 26.4%</p> <p>30.0%</p>	<p>-5.9 pct pts (95%CI -16.3, 4.5) Relative change (-18.3%)</p> <p>-2.3 pct pts (95%CI -12.9, 8.3) Relative change (-7.1%)</p>	<p>NR (by 12m or age or by 24m of age)</p>
Group	N														
Registry+CRR	159														
Registry + Provider rem	153														
Registry+ Usual care	139														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time
<p>Author & year (study period): Muehleisen 2007 (2003)</p> <p>Design suitability (design): Greatest (non randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (4)</p> <p>Outcome Measurement: Children (underimmunized) Hospital (outpatient f/u) Childhood vaccinations</p>	<p>Location: Switzerland, Basel</p> <p>Intervention: Client reminders/ recall –delivered during hospital stay + client education + provider reminder (letter sent at discharge)</p> <p>Comparison: usual care</p>	<p>Study hospital</p> <p>Children hospitalized over the study period (Ages 61 days to 17 years) and underimmunized N hospitalized=647 N with records=430 Consecutive assignment <u>Condition N assigned* N analyses*</u> Inter 211 98 95 Comp 219 111 106 *subset underimmunized</p>	<p>Receipt of 1 or more catch-up immunizations (among under-immunized children)</p> <p>Results at 1 month after discharge</p>	<p><u>Comparison</u> 35%</p> <p>8%</p>	<p><u>Intervention</u> 45%</p> <p>27%</p>	<p>10 pct pts (28.5%) (95% CI -4, +24) Relative change (28.6%)</p> <p>19 pct pts (337%) (95% CI : 9, 29)</p>	<p>9 months</p>

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Puech 1998 (1996)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (Cochrane review)</p> <p>Outcome Measurement: Adults 65 yrs + Outpatients Influenza</p>	<p>Location: Australia; Sydney</p> <p>Intervention: Client reminder/recall-mailed postcard</p> <p>Comparison: usual care</p>	<p>Study general practice</p> <p>Adult patients aged 65 years or older</p> <p>Stratified by gender and randomly assigned</p> <table border="1" data-bbox="548 487 989 584"> <thead> <tr> <th><u>Group</u></th> <th><u>N assigned</u></th> <th><u>N analyses</u></th> </tr> </thead> <tbody> <tr> <td>Inter</td> <td>154</td> <td>154</td> </tr> <tr> <td>Comp</td> <td>171</td> <td>171</td> </tr> </tbody> </table>	<u>Group</u>	<u>N assigned</u>	<u>N analyses</u>	Inter	154	154	Comp	171	171	<p>Receipt of influenza vaccination</p> <p>Consolidated gender</p>	<p><u>Comparison</u> 45.0%</p>	<p><u>Intervention</u> 54.5%</p>	<p>9.5 pct pts (95%CI -1.3, 20.3) Relative change (21.1%)</p>	<p>1 flu season (4m)</p>
<u>Group</u>	<u>N assigned</u>	<u>N analyses</u>														
Inter	154	154														
Comp	171	171														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time						
<p>Author & year (study period): Rhew 1999 (1997)</p> <p>Design suitability (design): Greatest suitability (group randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (3)</p> <p>Outcome Measurement: Adults Outpatients PPV</p>	<p>Location: USA; West Los Angeles, CA</p> <p>Intervention: 1. Nurse/clerk assessment, Standing orders, comparative feedback, client education (reminders), provider reminders</p> <p>2. Nurse/clerk assessment, Standing orders w/compliance reminders, client education (reminders), provider reminders</p> <p>Comparison: client education (reminders) and provider reminders</p>	<p>Three health care firms/teams in geographically distinct areas.</p> <p>Provider teams were randomly assigned to condition</p> <p>Clients of provider/team with regularly scheduled appointments</p> <p><u>Team N patients seen in 12wks</u></p> <table border="1" data-bbox="548 552 989 649"> <tr> <td>1</td> <td>1,101</td> </tr> <tr> <td>2</td> <td>1,221</td> </tr> <tr> <td>3</td> <td>1,180</td> </tr> </table>	1	1,101	2	1,221	3	1,180	<p>Vaccination rates for pneumococcal vaccine</p> <p>SO+PAF+CRR/CE+PR</p> <p>SO+CRR/CE+PR</p> <p>CRR/CE+PR</p> <p>Note: All 3 study arms included client education/client reminders, so this study does not provide direct evidence on the effectiveness of client education/client reminders.</p> <p>(See Standing Orders)</p>	<p><u>Comparison</u></p> <p>5%</p>	<p><u>Intervention</u></p> <p>22%</p> <p>25%</p>	<p>Not Comparative on CRR</p> <p>Team 1 vs Team 3</p> <p>17 pct pts (p<0.001) (95%CI 4.3, 19.7)</p> <p>Relative (340%)</p> <p>2 vs 3</p> <p>20 pct pts (p<0.001) [(95%CI 7.3,22.7)</p> <p>Relative (400%)</p>	<p>12 weeks</p>
1	1,101												
2	1,221												
3	1,180												

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time															
<p>Author & year (study period): Rodewald 1999 (1994-1995)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (Cochrane review)</p> <p>Outcome Measurement: Children Outpatients Childhood series</p>	<p>Location: USA, Rochester, New York</p> <p>Intervention:</p> <ol style="list-style-type: none"> Tracking and Outreach-(CRR staged mail,phone, home) Provider reminders Tracking and Outreach + Provider Reminders <p>Comparison: Usual care</p>	<p>Study primary care sites N=9</p> <p>Pediatric clients of study practices (age 0-12m)</p> <p>N eligible =3015</p> <p>Random assignment to group</p> <table border="1" data-bbox="548 456 989 618"> <thead> <tr> <th>Group</th> <th>N assigned</th> <th>N analyses</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>715</td> <td>630 (88%)</td> </tr> <tr> <td>2</td> <td>801</td> <td>744 (93%)</td> </tr> <tr> <td>3</td> <td>732</td> <td>648 (89%)</td> </tr> <tr> <td>Comp</td> <td>767</td> <td>719 (94%)</td> </tr> </tbody> </table>	Group	N assigned	N analyses	1	715	630 (88%)	2	801	744 (93%)	3	732	648 (89%)	Comp	767	719 (94%)	<p>Age-appropriate vaccinations for study clients</p> <p>Tracking/Outreach +PR</p> <p>Note: Two study arm were relevant to our evaluation of outreach as a client reminder/recall intervention</p> <p>We selected the Tracking/outreach +provider reminder arm for this update (See also Home Visits) (See also Provider Reminders)</p>	<p><u>Pre</u></p> <p>I (85%)</p> <p>C (81%)</p>	<p><u>Post</u></p> <p>I 95%</p> <p>I 74%</p>	<p>17 pct pts (95%CI 13.4, 20.6)</p> <p>Relative change (21.0%)</p>	<p>18 m</p>
Group	N assigned	N analyses																				
1	715	630 (88%)																				
2	801	744 (93%)																				
3	732	648 (89%)																				
Comp	767	719 (94%)																				

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Smith 1999 (1995-1996)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (4)</p> <p>Outcome Measurement: Adults (medicare eligible) Outpatients Influenza</p>	<p>Location: USA; 10 counties in Indiana</p> <p>Intervention: Client reminder/recall-mailed letter with some educational content</p> <p>Comparison: usual care</p>	<p>Selected counties in Indiana: N=10</p> <p>Samples of medicare eligible adults in study counties who were not members of an HMO (1000 per county) N identified = 10,000 N eligible=9011 randomized to condition</p> <table border="1" data-bbox="548 584 989 714"> <thead> <tr> <th><u>Group</u></th> <th><u>N assigned</u></th> <th><u>N analyses</u></th> </tr> </thead> <tbody> <tr> <td>Inter</td> <td>4508</td> <td>4508</td> </tr> <tr> <td>Comp</td> <td>4503</td> <td>4503</td> </tr> </tbody> </table> <p>Actual f/u 6941 (69%) overall</p>	<u>Group</u>	<u>N assigned</u>	<u>N analyses</u>	Inter	4508	4508	Comp	4503	4503	<p>Influenza vaccination by self-report or medicare claim record</p> <p>Intention to treat with record</p> <p>Logistic regression analysis</p> <p>Note: Authors evaluated nonresponse and generated overall estimates of vaccination</p>	<p><u>Comparison</u></p> <p>60.6%</p> <p>est 64.2%</p>	<p><u>Intervention</u></p> <p>62.4%</p> <p>est 69.0%</p>	<p>1.8 pct pts (95% CI -0.2, 3.8) Relative change (3.0%)</p> <p>Adj OR=1.22 (95%CI 1.09, 1.37)</p> <p>4.8 pct points</p>	<p>1 flu season (4m)</p>
<u>Group</u>	<u>N assigned</u>	<u>N analyses</u>														
Inter	4508	4508														
Comp	4503	4503														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Szilagyi 2002 (1993-1999)</p> <p>Design suitability (design): Greatest (other design with concurrent comparison)</p> <p>Quality of execution (# of Limitations): Fair (4)</p> <p>Outcome Measurement: Children Outpatients (clinics) Childhood series Series at 24m, at 12m</p>	<p>Location: USA; Monroe County, New York</p> <p>Intervention: Outreach through inner-city practices with tracking of clients, client reminder/recall, and home visits if necessary</p> <p>Comparison: Usual care in suburban practices</p>	<p>Pediatric practices in Rochester, New York N=10 implemented outreach over the study period</p> <p>Medical record review of sampled pediatric patients of study practices</p> <table border="0" data-bbox="548 519 989 617"> <tr> <td></td> <td style="text-align: center;"><u>1993</u></td> <td style="text-align: center;"><u>1999</u></td> </tr> <tr> <td>Inter-inner city</td> <td style="text-align: center;">NR</td> <td style="text-align: center;">NR</td> </tr> <tr> <td>Comp-suburbs</td> <td style="text-align: center;">NR</td> <td style="text-align: center;">NR</td> </tr> </table>		<u>1993</u>	<u>1999</u>	Inter-inner city	NR	NR	Comp-suburbs	NR	NR	<p>Immunization rates (age appropriate series)</p> <p>24 months of age subset</p> <p>12 months of age subset</p>	<p>1993 baseline</p> <p>I: 55% C: 73%</p> <p>I: 67% C: 88%</p>	<p>1999 post</p> <p>I: 84% C: 88%</p> <p>I: 87% C: 92%</p>	<p>Difference: 14 pct pts [95%CI unable to calc.] Relative change (19.2%)</p> <p>Difference: 16 pct pts [95% CI unable to calc] Relative change (18.2%)</p>	<p>6 years</p> <p>6 years</p>
	<u>1993</u>	<u>1999</u>														
Inter-inner city	NR	NR														
Comp-suburbs	NR	NR														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Szilagyi 2006 (1998-2000)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (2)</p> <p>Outcome Measurement: Adolescents Outpatients Adolescent vaccines (HepB, Td)</p>	<p>Locations: USA, Rochester, NY</p> <p>Intervention: Client reminder/recall system</p> <p>Comparison: Usual care</p>	<p>Adolescents 11-14 years of age with at least one visit on billing records</p> <p>N potential eligible = 5902</p> <p>N randomized = 3006 (child was unit of randomization)</p> <table border="1" data-bbox="548 553 989 651"> <thead> <tr> <th><u>Group</u></th> <th><u>N baseline</u></th> <th><u>Inactive</u></th> </tr> </thead> <tbody> <tr> <td>Inter</td> <td>1496</td> <td>132</td> </tr> <tr> <td>Comp</td> <td>1510</td> <td>168</td> </tr> </tbody> </table>	<u>Group</u>	<u>N baseline</u>	<u>Inactive</u>	Inter	1496	132	Comp	1510	168	<p>Up-to-date rates for hepatitis B and for Tetanus vaccinations</p> <p>Mean number of days eligible for each vaccine during the study time frame</p>	<p>Hep B- I: 45.1 C: 44.0</p> <p>Td- I: 24.7 C: 23.8</p>	<p>Hep B- I: 62.0 C: 57.8</p> <p>Td- I: 52.0 C: 49.9</p>	<p>Change in Hep B vaccination rates</p> <p>I: 16.9 C: 13.8 Diff: 3.1 pct pts, p=0.03</p> <p>Changes in Td vaccination rates</p> <p>I: 27.3 C: 26.1 Diff: 1.2 pct pts, p=0.5</p>	
<u>Group</u>	<u>N baseline</u>	<u>Inactive</u>														
Inter	1496	132														
Comp	1510	168														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time									
<p>Author & year (study period): Vivier 2000 (1998)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (3)</p> <p>Outcome Measurement: Children Outpatients Childhood immunizations</p>	<p>Location: USA; Rhode Island</p> <p>Intervention: Client reminder/recall (telephone, mail, combined) + database</p> <p>Comparison: Usual care (database)</p>	<p>Underimmunized children enrolled in hospital-based managed care practice</p> <p>N = 264 children were eligible and randoml assigned to condition</p> <table border="1" data-bbox="548 456 989 553"> <thead> <tr> <th>Group</th> <th>N allocated</th> <th>N analyses</th> </tr> </thead> <tbody> <tr> <td>CRR any</td> <td>193</td> <td>193</td> </tr> <tr> <td>Comp</td> <td>71</td> <td>71</td> </tr> </tbody> </table>	Group	N allocated	N analyses	CRR any	193	193	Comp	71	71	<p>Up-to-date status at the end of the 10wk f/u period (receipt of indicated vaccinations)</p>	<p>C: 2.8%</p>	<p>I: 15.0%</p>	<p>12.2 pct pts (95%CI 5.8, 18.4) Relative change (436%)</p>	<p>10 weeks</p>
Group	N allocated	N analyses														
CRR any	193	193														
Comp	71	71														

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time
<p>Author & year (study period): Winston 2007 (2004)</p> <p>Design suitability (design): Greatest (iRCT)</p> <p>Quality of execution (# of Limitations): Fair (4)</p> <p>Outcome Measurement: Adults 65 yrs + Outpatients Administrative database PPV</p>	<p>Location: USA; Atlanta, GA</p> <p>Intervention: Client reminder/recall by telephone following CRR by mail and small media postings in clinics</p> <p>Comparison: Usual care following CRR by mail with small media postings in clinics</p>	<p>Study managed care network general medicine clinics</p> <p>Unvaccinated adults age 65 years or older (subset of overall study)</p> <p>N allocated</p> <p>Inter 1198 Comp 1197</p> <p>Note: 44% of intervention group were found to be previously vaccinated for PPV</p>	<p>Receipt of pneumococcal vaccination among previously unvaccinated intention to treat analysis</p>	<p>I: (44%) C: NR</p>	<p>I: 17% C: 8% p<0.001</p>	<p>9 pct pts (95%CI 6.4, 11.6) Relative change (112%)</p> <p>Adjusted Odds ratio for the overall study = 2.3 (95%CI 2.0, 2.7)</p>	<p>6m</p>

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time
<p>Author & year (study period): Wood 1998 (1994-1995)</p> <p>Design suitability (design): Greatest (individual randomized trial)</p> <p>Quality of execution (# of Limitations): Fair (3)</p> <p>Outcome Measurement: Children Outpatients Childhood series up-to-date at 12m</p>	<p>Location: USA; Los Angeles</p> <p>Intervention: Case management effort including home visits and telephone and mail contact and follow up+ client education (small media)</p> <p>Comparison: Client education (small media)</p>	<p>African-American women-infant pairs in inner-city Los Angeles Random selection of candidates with interview for eligibility N=419 eligible and assigned</p> <p>Group <u>N assigned</u> <u>N analyses</u> Intervention 209 185 (88%) Comparison 210 180 (86%)</p>	<p>Up-to-date at 12months of age</p>	<p>C 50.6%</p>	<p>I 63.8%</p>	<p>13.2 pct pts p=0.01 (95%CI 3.1, 23.3)</p>	<p>1 year</p>

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time
<p>Author & year (study period): Yanagihara 2005 (1998-2001; 2 years)</p> <p>Design suitability (design): Fair (interrupted time series)</p> <p>Quality of execution (# of Limitations): Fair (4)</p> <p>Outcome Measurement: Adults 65 yrs + (medicare clients) Outpatients PPV</p>	<p>Location: USA; Hawaii</p> <p>Intervention: Client reminder/recall (letter and postcard) + community-wide education + expanded access in healthcare settings + client education (small media)</p> <p>Comparison: Fee-for-service clients (some exposure to community-wide interventions)</p>	<p>Health Care Plan for Medicare clients in Hawaii</p> <p>Medicare cost contract members in Hawaii N eligible =33,017 Age and gender matched comparison population from Fee for Service plan N eligible = 51,369</p>	<p>Receipt of pneumococcal vaccine over the study period</p> <p>Comparison with interval change among fee-for-service clients -Receipt of PPV adjusting for age and gender -Streptococcal pneumonia related hospitalizations</p>	<p>Not reported</p>	<p>10.7 pct pts (authors reported)</p>	<p>10.7 pct pts (95%CI 8.8, 12.5) Unable to calculate relative estimate for this change</p> <p>Adj OR=1.66 (95%CI 1.58, 1.73)</p> <p>Adjusted rate ratio 0.45 (95%CI 0.27, 0.75)</p>	<p>2 years</p>

Studies providing Additional Information in Consideration of the Effectiveness of Client Reminder/ Recall Interventions (High risk participants)

Study	Location and Intervention	Study Population and Sample	Effect measure	Reported baseline	Reported effect	Value used in summary	Follow-up time
<p>Author & year (study period): Zimmerman 2006 (2001-2004)</p> <p>Design suitability (design): Greatest (other design with a concurrent comparison group)</p> <p>Outcome Measurement: Children (high-risk) Outpatient (clinics) Influenza</p>	<p>Location: USA; Pittsburgh, PA</p> <p>Intervention: Community health system project to improve vaccination rates</p> <p>Individual clinics adopted their own sets of interventions including provider reminders + prov education + client education + standing orders + client reminders + expanded access</p> <p>Comparison: Usual care (provider education)</p>	<p>Participating clinics within the University of Pittsburgh School of Medicine: N= 5 practices in 10 offices</p> <p><u>Condition</u> <u>N practices</u> <u>N clients</u></p> <p>Inter 5 2438 / 2935/ 3311</p> <p>Comp 1 NR</p> <p>Note: Intervention clinics implemented different types of client education / client reminder-recall elements</p> <p>Comparison clinic was an inner-city family medicine residency</p>	<p>Influenza vaccination coverage of active patients</p> <p>Note: Study conducted prior to and during change in ACIP influenza recommendations for children</p> <p>Note: Dramatic difference in baseline coverage rates indicating a significantly different comparison population</p>	<p>Baseline</p> <p>I: 10.4%</p> <p>C: 42.0%</p>	<p>Year 2</p> <p>I: 18.7%</p> <p>C: 42.7%</p>	<p>7.6 pct pts (p<0.001) 95%CI [NA] Relative (+78%)</p> <p>(OR=2.8 p<0.001 95%CI [2.3, 3.4])</p> <p>Note: Significant differences at baseline</p>	<p>2 years</p>

C: comparison
CE: client education
CI: confidence interval
Comp: comparison
CRR: client reminder and recall
DTaP: diphtheria, tetanus, and pertussis
I: intervention
IIS: immunization information system
Inter: intervention
iRCT: individual randomized control trial
L: letter
m: month
MMR: measles, mumps, and rubella vaccination
MVP: monthly voucher pickup
NR: not reported
OR: odds ratio
pct points: percentage points
PE: provider education
PPV: pneumococcal polysaccharide vaccine
PR: provider reminder
QI: quality improvement
ROPC: reduced out-of-pocket costs
T: telephone
UC: usual care
UTD: up-to-date
WCV: well child visit
WIC: Women, Infant, and Children