## Vaccination Programs: Home Visits to Increase Vaccination Rates

### Summary Evidence Table - Updated Evidence (search period: 1980-February 2012)

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<tr>
<th>Study</th>
<th>Location and Intervention</th>
<th>Study Aim, Population, and Setting</th>
<th>Effect measure</th>
<th>Reported Baseline</th>
<th>Reported Effect</th>
<th>Value used in summary [95%CI]</th>
<th>Follow-up time</th>
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<tr>
<td><strong>Author (Year):</strong> Arthur 2002</td>
<td>Location: England, rural areas</td>
<td><strong>Aim:</strong> to examine impact on vaccination uptake of combining 2 services for older persons in primary care.</td>
<td>Percent receiving influenza vaccine by end of 2-month intervention period</td>
<td>C=932 (67.9%) of 1372</td>
<td>I=505 (74.3%) of 680</td>
<td>+6.4 pct pts 95% CI (2,10)</td>
<td>Interv duration = 2 months</td>
</tr>
<tr>
<td><strong>Study Period:</strong> October-December 2000</td>
<td>Intervention: 1. at home mental and physical health check 2. offer of on-site vaccination</td>
<td><strong>Study population:</strong> 2408 (of 2052) eligible patients from a large rural general practice; median age 79 years</td>
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<tr>
<td><strong>Design Suitability (Design):</strong> Greatest (iRCT)</td>
<td><strong>Comparison:</strong> Personal letter of invitation attend influenza clinic at provider’s office</td>
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<tr>
<td><strong>Quality of Execution (# of Limitations):</strong> Good (1)</td>
<td><strong>Outcome Measure:</strong> Influenza vaccination</td>
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<td><strong>Author (Year):</strong> Banach 2012</td>
<td>Location: USA, New York City</td>
<td><strong>Aim:</strong> To assess seasonal influenza vaccination coverage within an urban home-based primary care (HBPC) program</td>
<td>Receipt of influenza vaccination</td>
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<td>Influenza vaccine receipt through the MSVD program: 508 patients (689 eligible patients): 74% vaccination coverage</td>
<td>N/A</td>
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<td><strong>Study Period:</strong> 2008-2009</td>
<td>Intervention: Home visits + reduced out-of-pocket costs</td>
<td><strong>Study population:</strong> All home-bound patients older than 65 years of age who received routine care from Mount Sinai Visiting Doctors (MVSD) n=689 eligible adults</td>
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<td><strong>Design Suitability (Design):</strong> Least (Cross-sectional)</td>
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<td><strong>Quality of Execution (# of Limitations):</strong> Fair (2)</td>
<td><strong>Outcome Measure:</strong> Influenza vaccination</td>
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| **Author (Year):** Bartu 2000 | **Location:** Australia, Perth | **Intervention:** 8 post-partum (for 6 months) home visits to assess, refer or provide education and support related to breastfeeding, parental drug use, and child development (including immunization). - nurse midwives | **Aim:** To assess effect of post-partum home visitation program for illicit drug-using mothers on breastfeeding, immunization, and parental drug use.  
**Setting:** recruitment was conducted in a hospital-based antenatal chemical dependency clinic. | **UTD status at 6 months post-partum** | **Comp 15 (20%)** of 76 | Intervention 11 (14%) out of 76 | -6 pct pts P=.283 95% CI [NR] | Interv period was 6 months |
| **Study Period:** April 2000-April 2003 | **Comparison:** telephone contact at 2 months and home visit at 6 months | | | | |
| **Design Suitability (Design):** Greatest (iRCT) | **Quality of Execution (# of Limitations):** Fair (4) | | | | |
| **Outcome Measure:** Immunization status at 2,4,6 months postpartum | **Study Population:** 152 women ranging in age from 17-41 years of age, 35-40 weeks of gestation at recruitment, 90% drug-dependent | | | | |
| **Author (Year):** Black 1993 | **Location:** Ontario, Canada | **Intervention:** 1. Home visit by public health nurse promoting influenza vaccination and identifying strategies to overcome barriers  
2. Safety education | **Study Population:**  
- clients - >65 years  
- public health patients  
- 66% with >1 chronic health problems  
N=359 participants | **Group 1 vs 2** | | 1% change (nonsig) | Not reported |
<p>| <strong>Study Period:</strong> 1990-1992 | | | | | | 42% of intervention group reported talking with nurse regarding influenza versus 18% of control group | |</p>
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<tr>
<td><strong>Author (Year):</strong> Bond 1998</td>
<td><strong>Location:</strong> Australia</td>
<td><strong>Study Population:</strong> • community wide clients – aged 9 or 16 months identified from Australian childhood immunization registry</td>
<td>4 DTP/OPV/Hib at 9 months or 1 MMR at 16 months Group 1 vs 2</td>
<td>Not reported</td>
<td>1% change</td>
<td>Not reported</td>
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<td><strong>Study Period:</strong> 1996</td>
<td><strong>Intervention:</strong> 1. Letter, telephone, and home contact including administration of vaccination</td>
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204 and 202 not up-to-date randomized to intervention and control | N=2,194 | | | |
| **Design Suitability (Design):** Greatest (iRCT) | **Comparison:** 2. Usual care | | | | | |
| **Quality of Execution:** Fair | **Outcome Measure:** DTP/OPV/MMR/Hib vaccination | | | | | |
| **Author (Year):** Browngoehl 1997, Kennedy 1994 | **Location:** USA, Philadelphia, Pennsylvania | **Study Population:** • Medicaid managed care group – clients – aged 30-35 months (control group) and 18-24 months (study group), • low socioeconomic status | 4 DTP/3 OPV/1 MMR at 35 months Group 1 vs 2 4 DTP/3 OPV/1 MMR/1 Hib at 35 months Group 1 vs 2 | Not reported | 7% change (p < 0.05) | Not reported |
| **Study Period:** 1992-1993 | **Intervention:** 1992--Tracking and reminders plus provider education and incentives plus parent education and incentives plus transportation assistance plus home visits (1,254 participants) | **Comparison:** 2. Older children (1,257) | **Group**  
1992  
2  
N  
1,254  
1,257 | | | |
<p>| <strong>Design Suitability (Design):</strong> Moderate (Retrospective cohort) | <strong>Outcome Measure:</strong> DTP/OPV/MMR vaccination | | | | | |
| <strong>Quality of Execution:</strong> Fair | | | | | | |</p>
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| **Dalby 2000** | **Location**: Canada, Hamilton, Ontario Georgia  
**Intervention**: preventive home visits “as needed” over 14 m to provide vaccinations, implement care plan based on assessment of cognitive, physical, social and emotional functions. - deliverers: visiting primary care nurse  
**Comparison**: usual care (not described) | **Aim**: To determine if follow-up care (telephone calls and home visits) could favorably affect the combined rate of deaths and admissions to an institution as well as rates of health services use among frail elderly living in community.  
**Study Population**: 113 adults over 70, from 2 primary care practices, living in community but at high risk for rapid deterioration | Proportion of participants administered influenza and pneumonia vaccines by nurse during home visits | Influenza: Comp: 29 (53.0%) of 54  
Pneumonia vaccine: Comp: 0 (0%) of 54 | Influenza  
Intervention: 53 (90.1%) of 59  
Pneumonia vaccine: Intervention: 31 (53.0%) of 59 | P<.001  
Pct pt change=37.1  
95%CI (21.8, 52.4) | 14 months |
| **Dietz 2000** | **Location**: USA, Georgia  
**Intervention**: WIC Programs + Home Visits | **Aim**: Evaluate the factors associated with the increase in childhood vaccination coverage levels from 53% in 1988 to 89% in 1994 in Georgia’s public health clinics  
**Setting**: all 227 public health clinics in Georgia  
**Study Population**: Children who were 21 to 23 months of age on the date of the assessment | Association between vaccination coverage in children and vaccination practices, policies, and management factors - home visits for clients unresponsive to other interventions [called “defaulters” in study] | Controlling for urban-nonurban residence, clinic coverage level at assessment, clinic size, proportion of WIC-enrolled children, the association between vaccination coverage and HV for defaulters | OR 1.31  
95% CI [1.10-1.55] | Intervperiod was 1 year |
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| **Authors (Year):** Deuson 2001 | **Location:** USA, Philadelphia PA  
**Intervention:** creation of data base + range of hep B promotion activities including reminder letters, health fairs and other outreach events at multiple community venues, as well as home visits - deliverers: nurses  
**Comparison:** None | **Aim:** To assess impact on coverage and costs of community-wide vaccination project.  
**Study Population:** 4384 Asian American children aged 2-13 living in target community | Coverage=proportion of participants with completed series of 3 doses | 157 (3.6%) of 4384 | 679 (15.5%) of 4384 | +11.9 pct pts  
95% CI (10.7,13.1) | Interv period was 11 months |
| **Authors (Year):** El-Mohandes 2003 | **Location:** USA, Washington DC  
**Intervention:** multi-component PIP (“Pride in Parenting”) focuses on parenting KAB and skills. 32 weekly home visits with referrals as needed. Other components: support groups, play groups, monthly PIP support calls. - deliverers: lay home visitors  
**Comparison:** standard social services by PIP monthly support phone call and referrals as needed. | **Aim:** Assess impact of community-based parenting education program on preventive health care use (and immunizations) by low-income minority mothers.  
**Study population:** 286 (of 426 eligible) mother-infant dyads recruited immediately post partum, with < 5 prenatal visits.  
**Intervention group** (n=146):  
M age: 24.8 years  
%Black: 98.0  
<high school: 41.8  
%<poverty: 55.5  
**Control group** (n=140):  
M age: 24.8 years  
%Black: 98.0  
<high school: 41.8  
%<poverty: 55.5 | At 9 months:  
**Intervention**  
Control  
16 (20.8%) of 77  
34 (37.4%) of 91  
P= .01  
95% CI (3.1, 30.1)  
**At 12 months:**  
Intervention  
Control  
27 (35.1%) of 77  
37 (40.7%) of 91  
P= .28  
95% CI (-9.1, 20.3) | +16.6% pct pts  
P=.01  
95% CI (3.1, 30.1)  
+5.6 pct pts  
P=.28  
95% CI (-9.1, +20.3) | Interv period was 1 year |
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<td>Author (Year): Johnston 2006</td>
<td><strong>Location</strong>: USA, Pacific Northwest</td>
<td><strong>Aim</strong>: Evaluate whether “health specialists” providing postnatal home visits and other supports for parents of young children increase vaccination visits and age-appropriate vaccination rates</td>
<td>Proportion of children age-appropriately vaccinated at 24 months</td>
<td>Usual Care</td>
<td>Healthy Steps vs. Usual Care</td>
<td>Usual Care 88 (84.6%) of 104</td>
<td>Healthy Steps 215 (89.9%) of 239</td>
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<tr>
<td>Study Period: July 1998-December 2003</td>
<td><strong>Intervention</strong>: multi-component “Healthy Steps for Young Children” which includes postnatal home visits to support child health and development (e.g., immunization), parenting practices, and parental wellbeing. - deliverers: Masters’ level with nursing, SW, or MH background</td>
<td><strong>Setting</strong>: clinics providing pregnancy and pediatric services within a large integrated delivery system</td>
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<tr>
<td>Design Suitability (Design): Great (non-randomized trial with comparison group)</td>
<td><strong>Study Population</strong>: Children born to eligible women identified during the recruitment period N=343 Group Healthy Steps 239 Usual care 104</td>
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<tr>
<td>Quality of Execution (# of Limitations): Fair (3)</td>
<td><strong>Outcome Measure</strong>: UTD at 24 months</td>
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| **Author (Year):** Kitzman 1997  
**Study Period:** 1990-1992  
**Design Suitability (Design):** Greatest (iRCT)  
**Quality of Execution (# of Limitations):** Fair (3)  
**Outcome Measure:** Childhood series vaccination | **Location:** USA, Memphis TN  
**Intervention (T4):**  
a) Free transportation for scheduled prenatal care plus developmental screening and referral services at 6, 12, 24 months  
b) intensive home services during pregnancy and postpartum through child’s second birthday  
**Deliverers:** nurses  
**Comparison (T2):** a) only | **Aim:** To assess effect of prenatal and infancy home visits on PIH, preterm delivery, low birth weight; children’s injuries, immunizations, mental development and behavioral outcomes; maternal life course.  
**Study Population:** Low-income women, average age 18 years, 92% Black, 98% unmarried | Children’s UTD status at 24 months  
Treatment 4 vs. Treatment 2 | T2=68%  
T4=70% | +2 pct pts  
95% CI (-5, 9) | 24 months post-natal |
| **Author (Year):** LeBaron 2004  
**Study Period:** September 1996—February 2001  
**Design Suitability (Design):** Greatest (iRCT)  
**Quality of Execution (# of Limitations):** Fair (3)  
**Outcome Measure:** Childhood series vaccination | **Location:** USA, Fulton Co., GA (most of inner city Atlanta)  
**Intervention:** “Consolidated”=registry and Outreach [in-person telephone, mail or home visit recall] and Combination group [auto-dialer + Outreach]  
- Deliverers: trained nonmedical outreach workers  
**Comparison:** Usual care (registry) | **Aim:** Evaluation of the impact of large-scale registry-based CRR/outreach/home visit intervention on UTD at 24 months  
**Study Population:** Children born July 1995-August 1996 who had received public sector health services and were identified in MATCH registry  
**Eligible patients** N=3050 children  
**Group**  
**Intervention**  
**Comparison** | Proportion of children UTD at 24 months  
“Consolidated” vs. Comparison | Comp 259 (34%) of 763  
Consolidated 760 (37.5%) of 1524 | +3.5 pct pts  
95% CI= [-.6, +7.6] | Interv period was 24 months  
Note: auto-dialer alone vs comp=6.0 pct pt change, 95%CI (1.2, 10.8), P<.05 |
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| **Author (Year):** Lemstra 2011 | **Location:** Canada, Saskatoon Health Region  
**Intervention:** Home visits + Client reminder/recall + MIMS (database)  
**Comparison:** Client reminder/recall | **Study Population:** -2 year olds not UTD with MMR vaccination  
-Subset lived in low-income neighborhoods  
N=257  
Group  
Intervention 142  
Comparison 115 | Proportion of children UTD MMR vaccination | Comp 56 (48.7%) of 115 | Intervention 86 (60.5%) of 142 | +11.8 pct pts  
95% CI: [-0.4, +24] | 1 year |
| **Study Period:** 2007-2008 | **Design Suitability (Design):** Greatest (G-RCT) | **Quality of Execution (# of Limitations):** Good (1) | | | | |
| **Outcome Measure:** MMR vaccination | | | | | | |

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| **Author (Year):** Margolis 2001 | **Location:** North Carolina, urban/rural  
**Intervention:** - 2-4 home visits by nurse during first year post-natal  
-strengthening information support systems, assistance in obtaining care for primary care offices  
**Comparison:** Not reported | **Aim:** improve preventive service delivery, at multiple levels of community, practice, and family, with special attention to health outcomes of low-income mothers and their infants  
**Study population:** Women seeking prenatal care at community health center: 100% below poverty line, predominantly Black, unmarried, mean age 23-24 years | UTD by 12 months of age | Comp 52 (49.5%) of 103 | Intervention 62 (60.2%) of 103 | +10.7 pct pts  
95% CI (2.7, 24) | Interv duration = 12 months post-natal |
<p>| <strong>Study Period:</strong> July 1994-1997 | <strong>Design Suitability (Design):</strong> Moderate (Retrospective Cohort) | <strong>Quality of Execution (# of Limitations):</strong> Fair (3) | | | | | |
| <strong>Outcome Measure:</strong> UTD at 1 year of age | | | | | | | |</p>
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<td><strong>Author (Year): Nicholson 1987</strong></td>
<td><strong>Location:</strong> Trent, United Kingdom</td>
<td><strong>Study Population:</strong> - general practitioners - clients - aged &gt;65 years; otherwise, not well-described N= 127 general practitioners surveyed</td>
<td>Group 1 vs 2</td>
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<td>10% change (p &lt; 0.05) for home vaccination influenza, 1 versus 2 = 7% change (p &lt; 0.05) for regular or special immunization clinics</td>
<td>Not reported</td>
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<td><strong>Study Period:</strong> 1984</td>
<td><strong>Intervention:</strong> 1. Practice policies including any of following: home-bound clients to be vaccinated at home, client reminders, or special vaccination clinics</td>
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<td><strong>Design Suitability (Design): Least (Cross-sectional)</strong></td>
<td><strong>Comparison:</strong> 2. Lack of policies (Study group total, 127 general practitioners surveyed)</td>
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<td><strong>Author (Year): Nuttall 2003</strong></td>
<td><strong>Location:</strong> England, East Lancashire</td>
<td><strong>Setting:</strong> One general practitioner practice</td>
<td>Immunization uptake rates</td>
<td>27%</td>
<td>40%</td>
<td>+13 pct pts 95% CI [-11, 37]</td>
<td>1 influenza season</td>
</tr>
<tr>
<td><strong>Study Period:</strong> 2000-2001</td>
<td><strong>Intervention:</strong> Home visits + letter of invitation for influenza vaccine</td>
<td><strong>Study Population:</strong> - Not UTD patients - Aged 65-90 years - 61% female - Urban and rural locations - Low-income N=90 patients</td>
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<tr>
<td><strong>Design Suitability (Design): Greatest (Other design w/concurrent comparison)</strong></td>
<td><strong>Comparison:</strong> Letter of invitation for influenza vaccine</td>
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| Parry 2004 | Location: Stamford CT  
Intervention: 1. Home visit by DOH community health nurses to offer in-house influenza vaccination to persons over 65 year of age in all senior residential centers  
N=NR  
Note: this was only part of community-wide campaign.  
Comparison: 2. Prior usual care | Study population: Persons over 65 years of age residing in all senior residential centers  
2002 BRFSS self-reported vaccination in persons >65 years of age  
Community-wide coverage in vaccinations from 98-99 to 01-02 | 2002 BRFSS self-reported vaccination in persons >65  
Community-wide coverage increased from 7387 to 18,471  
Community-wide coverage estimated at 16% in 2001-02 | +75.7% | Interv duration was 3 years |
| Rodewald 1999 | Location: USA, Rochester, New York  
Intervention: 1. Lay community services provider-made phone, mail, or home contact  
2. Provider education plus feedback plus reminders  
3. Both 1 and 2  
Comparison: 4. Usual care  
Only 12% of group 1 received >1 home visits; only 16% of group 2 received provider reminder | Study population:  
clients - aged birth-12 months - - urban/rural  
36%-39% black  
6%-10% Hispanic  
low/middle socioeconomic status  
Group 1 vs 4  
Group 2 vs 4 | 20% change (p < 0.001)  
1% change (p = 0.54) no interaction between 1 and 2; other health outcomes (health visits and anemia and lead screenings) significantly increased in group 1 but not group 2 | Not reported |
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| **Author (Year):** Rosenberg 1995  
**Study Period:** 1992-1993  
**Design Suitability (Design):** Least (Before-after)  
**Quality of Execution:** Fair  
**Outcome Measure:** DTP/OPV/MMR vaccination  
**Comparison:** 1. Prior usual care  
2. Prior usual care  
**Location:** USA, New York City  
**Intervention:** 1. Local community-based organization performed outreach (e.g., making informal presentations where people congregate or making door-to-door visits) plus disseminated information plus screened vaccination history plus provided vaccination appointments plus reminders/follow-up  
**Study Population:**  
- clients - aged <5 years  
- 54% aged <2 years  
- urban; 40% Hispanic, 40% black  
- low socioeconomic status  
N= 2,676 participants  
**Setting:** public health clinics, homes, streets  
**Study Population:** Group 1 vs 2 | Evaluation subsample found DTP/OPV/MMR coverage  
**Baseline:** Group 1 vs 2 | Not reported | 49% change (p < 0.05) |
| **Author (Year):** Szilagyi 2002  
**Study Period:** 1994-1999  
**Design Suitability (Design):** Greatest (Other w/concurrent comparison)  
**Quality of Execution (# of Limitations):** Fair (4)  
**Outcome Measure:** Childhood series vaccination  
**Comparison:** Suburbs (data base)  
**Location:** USA, Monroe County NY  
**Intervention:** immunization data base + “staged” city-wide CRR/outreach/home visit - Deliverers: lay outreach workers assigned to primary care practices  
**Study Population:** Children 2 y or younger  
**Region:** N/% birth cohort  
- Inner city 1653 (74%)  
- Rest of city 938 (61%)  
- Suburbs 598 (9%) | Evaluation of intervention impact on disparities in childhood immunization rates by region (urban vs. suburban) and among blacks, whites, and Hispanics.  
**Setting:** 10 large primary care practices  
**Study Population:** Inner city vs. suburbs  
Rest of city vs. suburbs | Baseline: 67% of inner city  
79% of rest of city  
88% of suburbs  
**At 12 months:**  
- Inner city 87% of inner city  
92% of suburbs  
**At 24 months:**  
- Inner city 84% of inner city  
81% of rest of city  
88%  
**At 12 months:** Inner city vs. suburbs Difference=+10 pct pts  
Rest of city vs. suburbs Difference=+6 pct pts  
Inner city vs. suburbs Difference=+14 pct pts  
Inner city vs. suburbs Difference=+3 pct pts | Interv period was 24 months |
<table>
<thead>
<tr>
<th>Study</th>
<th>Location and Intervention</th>
<th>Study Aim, Population, and Setting</th>
<th>Effect measure</th>
<th>Reported Baseline</th>
<th>Reported Effect</th>
<th>Value used in summary [95%CI]</th>
<th>Follow-up time</th>
</tr>
</thead>
</table>
| **Author (Year):** Szilagyi 2011 | **Location:** USA, Rochester, New York  
**Intervention:** immunization database + "staged" client reminder/recall + home visits  
**Comparison:** Usual care | **Setting:** Eight primary care practices  
**Study population:**  
- Adolescents  
- Mean age 13.5 years  
- 63% Black  
- Urban  
- 74% Medicaid recipients  
- 6% uninsured | MCV4/Tdap/HPV  
**Follow-up time:** Interv period was 14 months | 1061 (32.4%) out of 3839  
1496 (44.7%) out of 3707 | +12.3 pct pts  
95% CI: [10, 14.5] |  |
| **Author (Year):** Wood 1998 | **Location:** USA, Los Angeles, California (10 ZIP codes)  
**Intervention:** 1. Case management with home visits and telephone contact prior to age 6 weeks and before each vaccination appointment, plus health passport **versus**  
**Comparison:** 2. Health passport only | **Setting:** homes and clinics  
**Study Population:**  
- clients - aged <15 months  
- 90% urban  
- 100% black  
- low socioeconomic status  
N= 419 participants | DTP/OPV/Hib (3:2:3 doses, respectively) at 12 months  
Group 1 vs 2 | Not reported | 13% change (p = 0.01) |  |