**EXECUTIVE SUMMARY**

**BACKGROUND:** President Barack Obama on May 5, 2009 announced The Global Health Initiative: “We will not be successful in our efforts to end deaths from AIDS, malaria and tuberculosis unless we do more to improve health systems around the world, focus our efforts on child and maternal health, and ensure that best practices drive the funding for these programs.” The Global Health Initiative emphasizes integrating health programs, but there is limited evidence guiding the integration of maternal, neonatal and child health and nutrition (MNCHN) services with family planning (FP) services. We conducted a systematic review to examine the evidence base for integrating MNCHN and FP services.

**METHODS:** Cochrane methods were used to search and screen the literature. Study inclusion criteria were: 1) peer-reviewed publication between January 1990-April 2010; 2) available intervention evaluation data (pre-post or multi-arm study design); 3) intervention was an organizational strategy or change, process modification or introduction of technologies aimed at integrating MNCHN and FP service delivery. Study rigor was assessed on a nine-point scale. The search process identified over 14,000 citations, most of which were not relevant to integration of MNCHN and FP services. After screening based on the inclusion criteria, a total of 36 articles representing 29 interventions were included in the review.

**OVERALL FINDINGS FROM THE INCLUDED STUDIES:**

- Interventions were conducted in a variety of locations. Ten studies were conducted in Sub-Saharan Africa; nine in South Asia; three in Latin America; two in East Asia; and one each in Russia, Syria, Italy, U.S., and Australia.

- Seven studies used a randomized control trial design; most studies used less rigorous designs such as pre-post or cross-sectional with a comparison group. The average rigor score of the studies was 3.2 (range: 1-8).

- Integrating MNCHN and FP services was feasible. Across the variety of integration models, settings, and target populations, most studies reported that integration had a positive impact on reported outcomes; however, many studies also reported mixed effects or no effect on some outcomes. No studies reported negative outcomes due to providing integrated services, although this could be the result of publication bias, as studies are more likely to be published if they have positive results.

- 15 interventions included several MNCHN services; all other interventions offered only one type of MNCHN service.

- Eight interventions offered only FP counseling and education, without FP contraceptive services/commodity provision. Interventions that offered provision of contraceptive commodities in addition to FP counseling and education were more likely to report increased uptake of contraceptives compared to interventions that did not offer contraceptive commodities.

- Most studies that measured use of MNCHN or FP services reported an increase in use due to integration (11 out of 15). Moreover, all but one study that measured the quality of services showed that quality improved after integration (11 out of 12).
• Few studies (4) reported on the cost of providing integrated services, and none of them found integration of services to result in increased costs. Although two studies did find initial costs of services to be higher for the provision of integrated services, over time, and with enhanced capacity utilization, the cost-effectiveness of providing integrated services (as measured by cost per birth averted and/or quality adjusted life years gained) was greater as compared to traditional services.

• An analysis of the four studies that compared co-located services to referral services found that co-located services resulted in higher contraceptive and condom use, fewer unplanned pregnancies and induced abortions (though this was not statistically significant), and were more cost-effective (although with higher upfront costs).

FACTORS PROMOTING OR INHIBITING EFFECTIVE INTEGRATION: Factors promoting and inhibiting successful integration fell into six categories: provider factors, issues of contraceptive commodity supply, cultural factors, financial support, logistics and coordination, and other factors.

CONCLUSIONS: MNCHN and FP service integration shows promise in improving a wide variety of health, behavioral and process outcomes. However, significant evidence gaps remain. Rigorous research comparing outcomes of integrated with non-integrated services, including cost, mortality and pregnancy-related outcomes, is greatly needed to inform programs and policy.
Systematic Review of Integration of Maternal, Neonatal, and Child Health and Nutrition and Family Planning

BACKGROUND

The Global Health Initiative (GHI) places a strong emphasis on integrating programs to address broad development challenges, and also on providing a comprehensive package of services for the populations served (GHI 2010). At the international level, the importance of integrating maternal, neonatal, and child health and nutrition (MNCHN) with family planning (FP) is well recognized as a key strategy, particularly for reducing maternal and child mortality. These two areas were highlighted at the 1994 International Conference on Population and Development in Cairo (Family Health International 1995) and are seen as integral to successfully achieving the 2015 Millennium Development Goals for improving maternal health (MDG 2010). In addition, a recent report by the United Nations Population Fund (UNFPA) and the Guttmacher Institute found that integrating MNCHN-FP services would cost approximately $1.5 billion less than providing MNCHN services alone (UNFPA 2009). Despite these facts, there is limited evidence to guide policy action and program efforts on service integration. This review examines the evidence for MNCHN-FP integration, reviews the factors that promote and inhibit program effectiveness and discusses lessons learned.

KEY RESEARCH QUESTIONS

- What are the key integration models evaluated in the literature?
- What are the key outcomes from these integration approaches?
- What is the rigor of the evaluation study designs?
- What types of integration are effective in what context?
- Do integrated services increase or improve service coverage, cost, quality, use, effectiveness and health?
- What are the best practices, processes and tools that lead to effective, integrated services?
- What are the barriers to effective integration?
- What are the evidence/research and program gaps? What more do we need to know?
- How can future policies and programs be strengthened?

MNCHN AND FP INTEGRATION MATRIX

A total of 29 peer-reviewed studies were included in this review. The number in each box represents the number of studies that fall into each integration category (studies may fall into more than one category).

<table>
<thead>
<tr>
<th>MNCHN Interventions</th>
<th>Family Planning Interventions*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Education and Counseling</td>
</tr>
<tr>
<td>Antenatal Services</td>
<td>10</td>
</tr>
<tr>
<td>Post-Abortion Care</td>
<td>10</td>
</tr>
</tbody>
</table>
Intrapartum/Childbirth Services | 3 | 2
Postnatal Care | 11 | 7
Infant/Child Services | 16 | 10
Maternal and Infant Nutrition | 5 | 3

*Note: Both family planning education and counseling and contraceptive service/commodity provision may include referrals to these services.

**STUDY INCLUSION CRITERIA**

- Published in a peer-reviewed journal (Jan 1990 - Apr 2010).
- Rigorous evaluation study that either compared before and after the intervention strategy was introduced (pre-post) or compared different models of integrating MNCHN and FP service delivery (comparison group).
- Intervention consists of an organizational or management strategy, organizational changes, process modifications, or the introduction of technologies aimed at integrating MNCHN and FP service delivery, or of different models of integrating MNCHN and FP service delivery. Both on-site delivery of services and referrals were considered integration for the purposes of this review, although these are different levels of integrating services.

Citations identified and screened (n=14658)

# studies included in the review (n=57 articles representing 50 interventions)

# published studies coded for the review (n=36 articles representing 29 interventions)

Citations excluded (n=14601)

- not relevant or only program reports with no evaluation data
- insufficient study design
- intervention was not an organizational or management strategy for integration

# unpublished studies (not coded) (n= 21)
METHODOLOGICAL RIGOR CRITERIA

Rigor score was assessed on a 9-point scale, with studies receiving one point for meeting each of 9 criteria: (i) pre-/post-intervention data; (ii) control or comparison group; (iii) prospective cohort; (iv) random assignment of participants to the intervention; (v) random selection of subjects for assessment, or assessment of all subjects who participated in the intervention; (vi) follow-up rate of 75% or more; (vii) comparison groups equivalent on socio-demographic measures; (viii) comparison groups equivalent at baseline on outcome measures; and (ix) control for potential confounders.

OUTCOMES REPORTED IN THE INCLUDED STUDIES

Studies were classified as having a positive, negative, mixed, or no effect on outcomes. A positive effect meant that the intervention was associated with an improvement in the outcome. A mixed effect meant that there were multiple measures of an outcome that showed inconsistent results. No effect meant that there was no difference in the outcome associated with the intervention. A negative effect meant the integrated intervention was associated with a worse outcome.

In the table and throughout the report, the “pregnancy” outcome is inclusive of all reported pregnancy outcomes, including unplanned pregnancy, pregnancy outcomes that were not defined as being planned or unplanned, and whether or not those pregnancies ended in abortion. The “unplanned pregnancy” outcome is limited to only those studies that specified unplanned pregnancy as an outcome. Furthermore, a distinction is made throughout the report between the outcomes “family planning use,” and “use of other MNCHN and FP services.” The latter category includes use of family planning services, such as participating in family planning counseling, regardless of whether a family planning method was actually accepted by the subject. It also includes use of MNCHN services such as antenatal care, postpartum care, and well baby care.

<table>
<thead>
<tr>
<th>Outcome</th>
<th># Studies reporting this outcome</th>
<th>Average rigor score of related studies</th>
<th># Studies that showed improvement in outcomes</th>
<th># Studies that showed a mixed or no effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>6</td>
<td>3.78</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Morbidity</td>
<td>5</td>
<td>4.40</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>10</td>
<td>4.00</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Unplanned pregnancy</td>
<td>4</td>
<td>3.75</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Abortion</td>
<td>2</td>
<td>5.00</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Infant/child growth</td>
<td>4</td>
<td>4.17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Behavioral outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condom use</td>
<td>3</td>
<td>4.33</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Family planning use</td>
<td>26</td>
<td>3.22</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>Breastfeeding</td>
<td>4</td>
<td>5.75</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Process outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unmet FP need</td>
<td>1</td>
<td>1.00</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Attended or safe deliveries</td>
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<td>2.67</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Use of other FP or MNCHN services</td>
<td>12</td>
<td>2.22</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Vaccination coverage</td>
<td>4</td>
<td>3.50</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Coverage of other FP or MNCHN services</td>
<td>1</td>
<td>2.00</td>
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<td>0</td>
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<tr>
<td>Quality of FP or MNCHN services</td>
<td>15</td>
<td>2.20</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Cost or cost-effectiveness</td>
<td>4</td>
<td>2.17</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>
**FINDINGS FOR KEY CATEGORIES OF OUTCOMES**

Based on the above table, the outcomes of all included studies were assessed to determine if the body of evidence supports an integrated approach to offering MNCHN and FP services.

**Coverage**
Of the four studies that reported vaccination coverage as an outcome, only one demonstrated an improvement in vaccination coverage as a result of the integrated intervention. The remaining three interventions had either mixed or no effect on vaccination coverage. One of these four studies also reported a different coverage outcome (availability of a private doctor or a government health center), and it found an increase in coverage as a result of the intervention. No studies reported that coverage decreased as a result of the intervention.

**Quality of care**
A total of 15 studies reported on quality of care as an outcome. Quality was measured using a variety of methods, such as client satisfaction measures, quality index scores, and proportion of clients receiving certain types of support and information. Eleven of the 15 studies reporting quality outcomes found that the integration intervention improved quality, while the remaining four studies found either mixed or no effect on quality. No studies reported that quality decreased as a result of the intervention.

**Use of MNCHN and FP services**
Twelve studies reported use of MNCHN and FP services. This category included use of antenatal care, post-abortion care and family planning services (though not necessarily use of a contraceptive method); infant follow-up visits; immunizations administered; and visits to clinics. All but one study found that use of MNCHN and FP services increased as a result of the integrated intervention; the remaining study found that use of MNCHN and FP services did not change. No studies reported that use of MNCHN and FP services decreased as a result of the intervention.

**Cost and cost-effectiveness**
Only four studies reported either absolute cost or cost-effectiveness, and all four studies demonstrated either a decrease in cost or an improvement in cost-effectiveness as a result of the intervention. Two studies found that cost per visit or per service decreased after an integrated intervention had been implemented. The other two studies also showed increased cost-effectiveness, although upfront costs were higher for the integration intervention.

**Effectiveness**
Measures of effectiveness included health and behavioral outcomes. The most commonly reported behavioral outcome was family planning use. Of 26 studies reporting this outcome, 19 found an increase in family planning use as a result of the integrated intervention, whereas seven found mixed or no effect. The most commonly reported health outcome was subsequent pregnancy. Of ten studies reporting this outcome, four found a decrease in pregnancy as a result of the integrated intervention, whereas six found mixed or no effect. (Only four of the ten studies specifically measured unplanned pregnancies; two found a decrease and two found mixed or no effect). Results were similar for other health and behavioral outcomes, with some studies finding a positive effect and others finding mixed or no effect. No studies reported negative outcomes for any health or behavioral outcomes.

**OVERALL FINDINGS FROM THE INCLUDED STUDIES**
• A total of 36 peer-reviewed articles met the inclusion criteria, and they reported on 29 distinct interventions. Ten were conducted in Sub-Saharan Africa; nine in South Asia; three in Latin America; two in East Asia; and one each in Russia, Syria, Italy, U.S., and Australia.

• Seven studies used a randomized control trial design; the average rigor score of the randomized control trials was 6.3 out of nine (range: 5-8). Most studies used less rigorous designs such as pre-post or cross-sectional with a comparison group. The average rigor score of these studies was 1.9 (range: 1-6).

• Integrating MNCHN and FP services was feasible. Across the variety of integration models, settings, and target populations, most studies reported that integration had a positive impact on reported outcomes; however, many studies also reported mixed effects or no effect on some outcomes. No studies reported negative outcomes due to providing integrated services, although this could be the result of publication bias, as studies are more likely to be published if they have positive results.

• 15 interventions included several MNCHN services; all other interventions offered only one type of MNCHN service.

• Eight interventions offered only FP counseling and education or referral to FP counseling and education, without FP contraceptive services/commodity provision. Interventions that offered provision of contraceptive commodities, either onsite or as a referral, in addition to FP counseling and education were more likely to report increased uptake of family planning compared to interventions that did not offer contraceptive commodities.

• Most studies that measured use of MNCHN and FP services reported an increase in use due to integration (11 out of 15). Moreover, all but one study that measured the quality of services showed that quality improved after integration (11 out of 12).

• Few studies (4) reported on the cost of providing integrated services, and none of them found integration of services to result in increased costs. Although two studies did find initial costs of services to be higher for the provision of integrated services, over time, and with enhanced capacity utilization, the cost-effectiveness of providing integrated services (as measured by cost per birth averted and/or quality adjusted life years gained) was greater as compared to traditional services.

• An analysis of the four studies that compared co-located and referral services found that co-located services resulted in higher family planning and condom use, fewer unplanned pregnancies and induced abortions (though this was not statistically significant), and were more cost-effective (although with higher upfront costs).

**ADDITIONAL FINDINGS FROM UNPUBLISHED STUDIES**

• A total of 21 studies were identified that were not published in peer-reviewed journals, but otherwise met the inclusion criteria.

• Eleven studies offered comprehensive post-abortion care services, including FP. These were similar to the interventions offering post-abortion care represented by the published studies.

• Ten studies offered maternal and child health services, other than post-abortion care, with FP services. They varied as to the specific type of MNCHN services offered and the comprehensiveness of services.

• None of the studies presented interventions evaluated among the unpublished studies was found to fill integration matrix cells not already represented by the published studies. However, two unique interventions were identified different from the interventions from the published studies:
  - A study conducted in Egypt evaluated the effect of birth spacing messages that targeted men through influential people in the community on use of MNCHN and FP services. The intervention yielded positive results: change in knowledge and attitudes of birth spacing among
women, enhanced use of post-partum FP, and increased utilization of FP services at clinics, especially among low-parity women. However, fear of FP side effects remains an obstacle to achieving healthy birth intervals.

- A study conducted in India evaluated the effect of an intervention involving men in their wives' antenatal and postnatal care on several outcomes, including family planning and condom use, breastfeeding, vaccination coverage, and quality and cost of services. Knowledge of condoms for dual protection and breastfeeding as a FP method increased in both men and women, with a significant uptake of condom use postpartum. Infant vaccination coverage were uniformly high pre- and post-intervention. Clients were satisfied with the modified package of services; provider time and increase in material costs were found to be feasible and sustainable.

**FACTORS PROMOTING OR INHIBITING EFFECTIVE INTEGRATION**

**Promoting Factors:**
- Stakeholder support and interest in integration, including country-level support
- Effective provider training, continuing education and supervision
- Availability of a large selection of contraceptives, and/or free contraceptives
- Client-centered education and counseling and emphasis on quality of care
- Involvement of men and male endorsement of FP
- Involvement of traditional health workers
- Availability and accessibility of a high-quality static health clinic (for community-based interventions)

**Inhibiting factors:**
- High workload, staff turnover and resistance to changing practices
- Cost and logistics of commodity procurement and supply
- Social constraints and cultural barriers to adoption of family planning
- High cost of provider training, deployment of community health workers
- Lack of coordination between providers (e.g. for combined maternal and infant health visits)
- Brief duration of intervention and lapses in program intensity
- Challenges to patient flow and stigma when patients are referred from one site to another (particularly in the context of post-abortion care)
- Inherited practices and attitudes (such as underestimating postpartum fertility) difficult to change

**ANALYSIS OF INTERVENTIONS BY MODEL OF MNCHN AND FP SERVICES INTEGRATED**

Studies were heterogeneous in terms of study objectives, types of interventions, study designs, locations and reported outcomes. Therefore, a meta-analysis was not conducted. However, studies were sorted by six models of integration based on the type of MNCHN service being integrated with family planning. Many studies fell into more than one integration model and are therefore included in each.

**Antenatal Care and Family Planning Services**

## Locations

- 1 in Chile
- 1 in Honduras
- 2 in Bangladesh
- 1 in Pakistan
- 1 in Nepal
- 1 in India
- 1 in Kenya
- 1 in Cambodia
- 1 in the USA

## Interventions

- All interventions integrated some form of antenatal care services with family planning education and counseling including comprehensive integration with other FP/MNCHN components, particularly postnatal care and infant/child growth.
- Contraceptives were provided in 4 out of 10 studies.
- Two studies included men (partners/spouses of pregnant women) as part of their target population.
- Four studies were conducted in clinics, four were carried out as community-based interventions, and two studies had both clinic and community sites as their point of intervention.
- Six studies simultaneously integrated FP and MNCHN services as part of the intervention; two studies added FP into their existing MNCHN services; one study strengthened existing FP-MNCHN services by adding an additional MNCHN component; and one study incorporated both an integrated FP/MNCHN service and compared it to an intervention that added FP into its existing MNCHN services.

## Study Designs

- 1 randomized controlled trial
- 2 non-randomized trials
- 1 before-after
- 4 serial cross-sectional
- 1 cross-sectional
- 1 multiple evaluations (2 cross-sectional and 4 serial cross-sectional)

## Reported Outcomes

**Health outcomes:** Maternal morbidity and mortality, infant morbidity and mortality, pregnancy, unplanned pregnancy, infant/child growth  
**Behavioral outcomes:** Family planning use (acceptance, uptake, and discontinuation), pre- and post-abortion family planning, antenatal care use, and breastfeeding  
**Process data/outcomes:** Vaccination coverage, coverage and use of FP or MNCHN services, quality of services, cost/cost-effectiveness

## Findings

### Coverage

- Only one of the ten studies reported on coverage of MNCHN-FP services. This study found that vaccination coverage increased as a result of the integration.

### Quality of care

- Seven studies reported change in quality of services; five found a positive effect, one found a mixed effect, and one found no effect.

### Use of MNCHN or FP services

- Seven studies reported use of MNCHN or FP services; one found a mixed effect and six found a positive effect.

### Cost

- Three studies reported cost and all found a positive effect. Though the initial costs were higher in the integrated service interventions, two studies documented greater cost-effectiveness in terms of births averted in the intervention group arm (for one it was a fixed-site integrated service delivery package) when compared to groups receiving no intervention or a less-intensive integrated delivery package.

### Effectiveness

- One study reported on infant mortality and found a positive effect in which infant mortality rates in one group of women who received FP education and counseling from community-based health workers were lower (5.2%) compared to the group of women who did not receive the intervention (7.2%; significance not reported).

- Looking at the compiled Matlab studies however, four studies reported mixed effects on infant and maternal mortality. Of the two studies that reported maternal
mortality, one found a positive effect where the total number of direct obstetric deaths was much lower in the treatment group compared to the comparison group, though significance was not reported. In one study, the authors did not report significant results for direct obstetric mortality between groups (RR=1.00 [0.96-1.05], p=0.93). In terms of infant mortality, two studies reported mixed results. One study showed an overall sustained decrease in perinatal mortality from 1979 (8.2% for both treatment and control groups) to 1986 (treatment group = 6.6%; control group = 6.8%), where significance were not reported. It should be noted that actual number of live births remained roughly the same in both treatment and comparison groups.

- Two studies reported morbidity and found a positive effect. One study reported significant results for infant morbidity rates between control and intervention groups (diarrhea: unadjusted RR = 11.3, p<0.001; hospitalization: unadjusted RR = 3.3, p=0.02). One study reported a sustained decrease over a 3-year period (2002: 9.4% vs. 2005: 1.3%, significance not reported) in complications during intervention after safer abortion was introduced at a clinic that offered ANC, FP, and STI screening.

- One study reported attended safe deliveries and reported a positive effect, as measured by admissions to Matlab maternity clinics (as proportion of live births). Specifically, 65% of admissions were from the treatment area compared to 33% from the comparison area (RR = 2.31, SIG, no p-value reported).

- Out of four studies reporting pregnancy, two found no effect, one found a mixed effect, and one found a positive effect, where mean number of children born to women in the intervention group was consistently lower than women in the control group, across age groups.

- Eight studies reported family planning use: four found a positive effect; four found mixed effects.

Rigor
- The rigor score of these 10 studies was generally low. Out of a possible score of 9, nine studies had scores of 4 or less and only one study had a score of 7.

Promoting and inhibiting factors
- A number of promoting factors behind the success of these integrated services include: availability of preferred contraceptive method of choice, autonomy in contraceptive choices, quality of care (cleanliness, confidentiality, client-centered), on-site integrated services, motivated providers and staff, monitoring indicators to measure change, and excellent referral systems.

- A few inhibiting factors were also reported, specifically: incompatible services offered by providers with the expansion of services, significant investment of providers’ time, high commitment demand from clients, difficulty finding adequate technical staff, and competing sources of contraception dispensers (medical stores, pharmacies).

Case Study: Bangladesh Provides Innovative Ways to Deliver FP/MNCH Services to Women (Routh 2001; Routh 2000)

For over two decades, Bangladesh had implemented a door-to-door MCH-FP service delivery package to married women of reproductive age, which included bimonthly home-visits by female fieldworkers distributing contraceptives and information on MCH-FP counseling. Although the program has been successful in improving contraceptive prevalence rates and immunization coverage, among other things, increasing resource constraints required the exploration of alternative strategies. This non-randomized trial evaluated two different point-of-service delivery packages compared to standard care. In strategy 1, community-based sites (schools and clubs) became the central point for female fieldworkers to dispense contraceptive commodities and MCH-FP counseling to women once a week. In strategy 2, services were provided at a fixed-site (primary health care clinic), and included FP, ANC, postnatal care, and sick child
and mother care. This enhanced service delivery package was carried out by three clinic staff daily, plus a doctor 3 days a week. As a way to motivate non-users, both interventions (community- and fixed-site) also conducted home visits. The control group consisted of national standard services offered door-to-door, and women who desired FP were referred to clinical services. Contraceptive use increased slightly in both community- and fixed-sites but remained the same in the door-to-door delivery group. Average daily attendance at fixed-site clinics improved with the greatest increase at the primary health care clinic. However, it was not determined if any of these increases were statistically significant. The fixed-site strategy was more cost-effective than the other strategies, as measured by costs associated with number of births averted and QALYs gained. Costs of services were much lower in the fixed-site strategy than those in the other two strategies. Quality-wise, clinics provided a more holistic approach to addressing clients’ needs in comparison to the community-based sites and door-to-door delivery method. However, alternative sources of contraceptives (e.g., pharmacies and shops) proved to be a deterrent for women in attending community-based sites. The authors concluded that replacement of the doorstep distribution strategy with the clinic-based strategy is feasible and cost-effective in urban areas without compromising the MCH-FP program performance.

### Post-Abortion Care and Family Planning Services

|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Locations     | 1 in Italy  
|               | 1 in Russia  
|               | 1 in Mexico  
|               | 1 in China   
|               | 1 in Cambodia  
|               | 2 in Zimbabwe  
|               | 1 in Kenya   
|               | 1 in Ghana   
|               | 1 in Senegal |
| Interventions | • All interventions integrated some form of family planning counseling and education to women receiving post-abortion care and took place at health care delivery points such as hospitals and clinics.  
|               | • FP services were provided in a variety of forms, including pre- and post-abortion individual and group counseling sessions, contraceptive service provision, and referrals for further FP education and/or commodities. Other components of the interventions included manual vacuum aspiration (MVA) training for providers, pain management for post-abortion care, comprehensive reproductive health care, STI prevention and management, male involvement in counseling, patient-centered care, media campaigns, supervision of clinic staff, and quality control in clinics.  
|               | • Only one intervention included additional MNCHN services other than post-abortion care. |
| Study Designs | 2 randomized controlled trials  
|               | 2 non-randomized trials  
|               | 1 before-after  
|               | 1 case-control  
|               | 3 serial cross-sectional  
|               | 1 cross-sectional with control group |
| Reported Outcomes | Health outcomes: Morbidity, unplanned pregnancy, abortion, infant/child growth  
|                 | Behavioral outcomes: Condom use, family planning use  
|                 | Process outcomes: Unmet FP need, use of MNCHN or FP services, quality of services, cost/cost-effectiveness |
| Findings       | Coverage  
|               | • No studies reported coverage of MNCHN or FP services.  
|               | Quality of care  
|               | • Integrated services resulted in improved quality of care among five of six studies which measured it.  
|               | Use of MNCHN or FP services  
|               | • Four studies reported a positive effect on use of MNCHN or FP services.  
|               | Cost |
The only study reporting cost found that the intervention resulted in a decreased cost per visit after the intervention (6,500 CFA Francs) compared to before the intervention (10,000 CFA Francs).

**Effectiveness**
- Integrated services consistently resulted in increased family planning use, with the exception of two studies which found mixed effects.
- The three studies that measured effects of the interventions on unplanned pregnancies or abortions found mixed results.
- No studies reported mortality, breastfeeding, vaccinations, attended or safe deliveries, or stigma.

**Rigor**
- The rigor of the included studies was generally quite low. Out of a possible 9 points, seven of the 10 studies had a rigor score of 1 or 2; two had a score of 5; and one had a score of 7. Only two of the studies used a randomized controlled trial design.

**Promoting and inhibiting factors**
- A number of factors that promoted the success of integrated services were mentioned, including free provision of contraceptives, patient-centered model of care, culturally appropriate services, onsite availability of FP services, timing of FP services (before and immediately after abortion), male involvement, and availability of resources and equipment and provider training.
- A number of inhibiting factors were mentioned as well, including staffing problems (high turnover, high workload, lack of supervision and continuing education, and stigma toward women perceived to have had an abortion); high cost of services to both clients and clinics; cost and logistics of contraceptive commodities; and limited client follow-up to sustain contraceptive use.

**Case Study: Kenya’s various integration models of post-abortion family planning services**
(Solo 1999)

This non-randomized trial aimed to test and compare the feasibility and acceptability of three PAC-FP integration models in six Kenyan Ministry of Health hospitals. In all settings, the MCH-FP clinics were on-site but were generally distant from the gynecological wards, and no formal linkages existed between the two units. Hence, the goal was to make post-abortion family planning services more accessible to women immediately after treatment and before discharge from the hospital. In Model 1, FP services were provided on the gynecological ward by ward staff (the same provider was responsible for all aspects of a patient’s management). In Model 2, FP services were provided on the gynecological ward by staff from the MCH-FP clinic. In Model 3, FP services were provided in the MCH-FP clinic by staff from the MCH-FP clinic. This study was limited both by the low rigor score (2 out of a possible 9 points) and the lack of pre- and post-intervention data provided in order to compare the three models. However, it was shown that, after the intervention, the proportion of women who received FP counseling was higher in Model 1 (92%) compared to Models 2 (62%) and 3 (54%). Furthermore, the proportion of women who left the hospital with a contraceptive method was higher in Model 1 (82%) compared to Models 2 (63%) and 3 (75%). Overall, the authors concluded that Model 1 was the easiest to set up and had the greatest effect on increasing use of FP counseling and contraceptive methods. However, important considerations for this model included adequate staffing, availability of private space for counseling and space for FP commodity storage, and the ability to keep a sufficient supply of contraceptives.

**Intrapartum/Childbirth Services and Family Planning Services**

| Studies | 3 peer-reviewed studies (Paxman 2005, Vernon 1993, Matlab articles) |
### Interventions

<table>
<thead>
<tr>
<th>Locations</th>
<th>I in Honduras</th>
<th>I in Bangladesh</th>
<th>I in India</th>
</tr>
</thead>
</table>
| **Interventions** | • All three interventions integrated several MNCHN interventions, including intrapartum and childbirth services, with FP education, counseling, and service provision.  
• The INOPAL study was a client-oriented reproductive health program in Honduras that integrated FP services into prenatal, delivery and postnatal hospital services. The package of services included prenatal education, individual counseling on FP and reproductive health, a variety of contraceptive commodities, a postpartum outpatient clinic for mothers and newborns, and a perinatal information system for improved data collection.  
• The MCH-FP project was a community-based reproductive health program in the Matlab district of Bangladesh that was evaluated over many years. Initially, the program offered basic MCH services, including distribution of safe delivery kits and FP, through household outreach. In 1996, four health centers were established to provide basic emergency obstetric care.  
• The India Local Initiatives Program sought to fill in the gaps in government services using community health workers to bring health and FP information, antenatal and postnatal care, and immunization services to the community. | | |

### Study Designs

<table>
<thead>
<tr>
<th>Study Designs</th>
<th>2 serial cross-sectional</th>
<th>I multiple evaluations, all cross-sectional or serial cross-sectional</th>
</tr>
</thead>
</table>

### Reported Outcomes

| Health outcomes: Mortality, infant/child growth  
Behavioral outcomes: Family planning use  
Process outcomes: Attended or safe deliveries, vaccination coverage, use of MNCHN or FP services, quality of services, cost/cost-effectiveness |
|---|---|

### Findings

<table>
<thead>
<tr>
<th>Coverage</th>
<th>One of the three studies reported on coverage of MNCHN or FP services. It found that vaccination coverage increased as a result of the integrated intervention.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of care</td>
<td>Two studies measured changes in quality of care, and both found an improvement in quality as a result of the intervention.</td>
</tr>
<tr>
<td>Use of MNCHN or FP services</td>
<td>All three studies measured use of MNCHN and FP services, and all three found that use had improved.</td>
</tr>
<tr>
<td>Cost</td>
<td>Two of the studies measured cost, and both found the integrated intervention to be more cost-effective.</td>
</tr>
</tbody>
</table>
| Effectiveness | All three studies measured family planning use, and all three found it to increase as a result of the integrated intervention.  
• Only one study measured mortality and infant/child growth; it found mixed or no effect for both outcomes.  
• None of the studies reported on morbidity, pregnancy, abortion, condom use, breastfeeding, unmet FP need, or stigma. |
| Rigor | The average rigor score of the three studies was quite low at 1.6 out of nine. |
| Promoting and inhibiting factors | Several factors were mentioned that promoted the success of the integrated services, including strong internal communication among staff, commitment of volunteers, flexibility to change services to better meet client needs, strong oversight, monitoring progress, ability for community health workers to identify and refer pregnant women |

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with complications, and the cost-effective delivery of more services.

- Several inhibiting factors were also mentioned, including adequate staffing, operational challenges in coordinating mother/baby visits, the high cost of implementation, time-consuming data collection, possible lack of sustainability, and the need for well-functioning higher levels of the health care system for successful community-level interventions.


Beginning in 1977, Bangladesh implemented a family planning program within Matlab district. MCH services were added in the 1980s, and the program came to be known as the Maternal Child Health Family Planning (MCH-FP) project. The program consisted of FP services, tetanus immunization during pregnancy (and later for all married women), iron/folic acid supplementation during pregnancy and lactation, distribution of safe delivery kits, and care of simple ailments during pregnancy. In each village within Matlab district, a female community health worker visited each household biweekly and then monthly with a male health assistant. In 1996, four health centers were established to provide basic emergency obstetric care for the catchment area and were staffed by a trained nurse-midwife and a paramedic who provided antenatal care, treatment of minor pregnancy and delivery complications, conducted normal deliveries, and referred serious cases to a hospital. Although some mortality evaluation data did not show an effect of the intervention, there appeared to be a sustained decrease in perinatal mortality and direct obstetric deaths in Matlab district compared to the comparison area. Furthermore, children under the age of 5 living in Matlab district were healthier (measured by height-for-age) than children living in the comparison area, although this difference was statistically significant for girls and not boys. Contraceptive prevalence rates showed greater improvement over 10 years time in Matlab district (from 3.0 to 44.1) compared to the control area (3.0 to 11.6), though statistical significance was not reported. The MCH-FP intervention was more cost-effective than the control area, measured by cost per birth averted, though average cost was higher in the former. A key factor that helped decrease mortality was the health care workers’ ability to identify and refer serious cases. In addition, the intervention delivered approximately three times more services per eligible woman than in the comparison area at the same cost per woman. The contribution of the community-level intervention to reducing maternal mortality depended on the functioning of higher levels of the health system. However, mortality dropped over time in both the intervention and comparison areas, most likely due to spillover and provision of government and NGO services in the comparison area. Although no difference in maternal mortality was found, there have been lower rates of fertility in the Matlab area as a result of 20 years of FP services.

**Postnatal Care and Family Planning Services**

|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Locations | 1 in Chile  
1 in Honduras  
2 in Nepal  
1 in Bangladesh  
1 in India  
1 in Syria  
1 in Kenya  
1 in Niger  
1 in the USA  
1 in Australia |
| Interventions | In general interventions in this row consisted of three types: 1) home visits with new mothers and their infants to provide post-natal care and education, including FP education and/or provision (n=7); 2) re-training of healthcare workers to offer both post-natal care and FP in their clinics and hospital settings (n=3); and 3) education |
about FP given to new mothers (n=1).

- Seven out of 11 studies included contraceptive commodity provision.
- Nine studies simultaneously integrated MNCHN and FP services integration, while two studies added FP to existing MNCHN services.
- Studies in this group provided very comprehensive services with all but one study providing services integrated with multiple types of MNCHN services from different rows in the matrix.

<table>
<thead>
<tr>
<th>Study Designs</th>
<th>4 randomized controlled trials</th>
<th>3 non-randomized trials</th>
<th>5 serial cross-sectional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported Outcomes</td>
<td>Health outcomes: Maternal morbidity and mortality, infant morbidity and mortality, repeat and unintended pregnancy, infant/child growth</td>
<td>Behavioral outcomes: Family planning use, breastfeeding</td>
<td>Process data/outcomes: Use of FP or MNCHN services, quality of care of services, cost or cost-effectiveness, vaccination coverage</td>
</tr>
<tr>
<td>Findings</td>
<td>Coverage</td>
<td>Two of the studies reported on vaccination coverage; one found an increase in coverage, whereas the other found no effect. No studies reported on coverage of other types of MNCHN or FP services.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quality of care</td>
<td>Integrated services resulted in improved quality of care in six of eight studies that measured it, and no effect in the other two studies.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of MNCHN or FP services</td>
<td>Of the five studies that reported on use of MNCHN and FP services, four found an increase in use and the other found a mixed effect.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cost</td>
<td>Only two studies reported on cost. One study found that a clinic-based strategy (PHCC) was more cost-effective than either a community-based strategy or a control group. The cost per birth averted post-intervention was US$585 in the PHCC group compared to US$830 in the control group and the cost per QALY gained was US$491-787 in the PHCC group compared to US$1,170-1,877 in the control group. The other study found that the average cost per service declined from US$4.12 to US$2.54 over three years of integrated services.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Effectiveness</td>
<td>Two studies reported on mortality and found no effect of the intervention on infant mortality.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Three out of 4 studies that reported on morbidity found positive effects, such as 11 times lower diarrhea for infants in the intervention group 80% lower adverse neonatal outcomes in the intervention group and QALYs gained highest in the intervention group and only one study reporting no effect.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Of the four studies that reported on pregnancy outcomes, three studies found no effect and one study found the number of births averted was highest in the control group post-intervention.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Two studies reported on infant growth with one finding that infant weight was 10,093g in the intervention group compared to 918g in the control group while the other study found no effect of the intervention.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Of the four studies that reported on breastfeeding, 3 found no effect and one found that 74% of the intervention group was still fully breastfeeding at 6 months postpartum compared to 10% of the control group.</td>
<td></td>
</tr>
</tbody>
</table>
| | | All 11 of the included studies reported on family planning use; 4 studies found no
effect of the intervention while 5 studies found positive results.

**Rigor**

- The rigor of the included studies was generally quite good, and included four randomized control trials. Out of a possible 9 points, the average rigor score for this group of studies was 3.6.

**Promoting and inhibiting factors**

- Factors promoting integration included informed free choice, coordination of care and increased communication among providers, high staff retention, commitment of volunteers, oversight, monitoring of indicators over time, clients’ perceptions that services were valuable, and increased cost-effectiveness.

- Factors inhibiting integration included significant investment in provider time, high levels of coordination required between providers, high demand from clients, need for improved infrastructure to coordinate care and maintain patient records, challenges in changing inherited cultural practices and attitudes, intervention success being dependent on the quality of midwives available for care, possible lack of sustainability and low levels of pre-intervention quality of care.

**Case study: Evaluating the impact of postnatal health education for mothers on infant care using a combined clinic and home visitation approach in Nepal (Bolam 1998)**

A randomized control study design was used to evaluate the impact of a one-on-one postnatal education program offered to new mothers attending a maternity hospital in Kathmandu, Nepal with follow-up conducted in the mothers’ homes. There were three intervention groups and one control group: the first group received health education at birth and at 3 months follow-up, the second group received health education at birth only, and the third group received health education at 3 months only; the control group did not receive any additional health education. Intervention groups received at least one of two interactive education sessions, conducted by a trained female health educator, midwife or community health worker. These interactive and supportive 20-minute sessions covered exclusive breast feeding, the need for FP, treatment of diarrhea, symptoms of acute respiratory infection in infants, and immunizations. The study found primarily mixed results. Health education given after delivery and three months later did not improve mothers’ knowledge and practices of infant health outcomes. Mothers who received health education at birth were slightly more likely to use contraception at six months after birth compared to mothers who received no health education at birth; however, contraceptive use remained low (< 38%) in all four groups. There were also no significant differences between groups for outcomes of infant feeding, care, or immunization. Authors reported that the short length and frequency of the intervention may have influenced results unfavorably; however, the intervention was designed to make this intervention more practical and sustainable over the long term. They recommend frequently repeated simple messages, suggesting that such interventions in developing countries will need to evaluate the trade-off between efficacy and costs. They also recommended that interventions should take into consideration women’s broader context; the extent of their influence in household decision making; childbearing, household, and work responsibilities; and work in the fields—all of which may significantly influence their health care seeking behaviors. Finally, study authors advocated evaluating a combination of antenatal and perinatal education sessions with mothers.

**Infant/Child Services and Family Planning Services**

**Studies**

<table>
<thead>
<tr>
<th>Studies</th>
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</thead>
</table>
### Locations

<table>
<thead>
<tr>
<th>In Chile</th>
<th>1 in Chile</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Honduras</td>
<td>1 in Honduras</td>
</tr>
<tr>
<td>In Syria</td>
<td>1 in Syria</td>
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<tr>
<td>In Kenya</td>
<td>1 in Kenya</td>
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<tr>
<td>In Niger</td>
<td>1 in Niger</td>
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<tr>
<td>In Ghana</td>
<td>1 in Ghana</td>
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<tr>
<td>In Togo</td>
<td>1 in Togo</td>
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<tr>
<td>In Pakistan</td>
<td>3 in Pakistan</td>
</tr>
<tr>
<td>In Bangladesh</td>
<td>2 in Bangladesh</td>
</tr>
<tr>
<td>In India</td>
<td>1 in India</td>
</tr>
<tr>
<td>In Nepal</td>
<td>1 in Nepal</td>
</tr>
<tr>
<td>In USA</td>
<td>1 in USA</td>
</tr>
<tr>
<td>In Australia</td>
<td>1 in Australia</td>
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</tbody>
</table>

### Interventions

- All interventions integrated some form of infant/child care services (e.g., treatment of childhood illnesses, basic preventive care, immunizations) with family planning education and counseling.
- Some interventions also offered antenatal and postpartum care, nutrition counseling, emotional support and counseling for new mothers on caring for themselves and their children, and education about early child development.
- Nine studies included provision of non-clinical contraceptive methods.
- Most studies emphasized training for providers (e.g., physicians, nurses, community health workers, nurse midwives, health educators).
- Two studies included specific efforts to engage with community members and important stakeholders to mobilize community support for improving family planning and overall community health.
- Ten studies were conducted in clinic settings; four of these included home visits by trained staff to encourage contraceptive continuation.
- Six studies were conducted exclusively in homes by community health workers/nurse midwives delivering a broad range of services from treating minor childhood illnesses, growth monitoring, encouraging breastfeeding and contraceptive use, health promotion, antenatal and postnatal care, and providing non-clinical contraceptive methods.
- Nine of the interventions simultaneously integrated MNCHN and FP services; five studies added FP services to existing MNCHN services; and two studies used dual strategies of delivering MNCHN and FP services, including both simultaneous provision of MNCHN and FP services and adding FP services to existing MNCHN services.

### Study Designs

| 5 randomized controlled trials |
| 3 non-randomized trials |
| 5 serial cross-sectional |
| 3 cross-sectional |

### Reported Outcomes

- **Health outcomes:** Mortality, morbidity, pregnancy, infant/child growth
- **Behavioral outcomes:** Condom use, family planning use, breastfeeding
- **Process outcomes:** Vaccinations, attended or safe deliveries, use of MNCHN or FP services, coverage of MNCHN or FP services, quality of services, cost/cost-effectiveness

### Findings

#### Coverage

- Three studies reported on vaccination coverage, only one of which found an increase in coverage as a result of the intervention. The other two both found mixed or no effect. One of the three studies also reported on coverage of primary care services and found an increase.

#### Quality of care

- Five of seven studies that reported on quality of care found that quality improved as a result of the intervention. Quality was measured in various ways. For example, in one study the number of women who received information about how their chosen method of contraception worked went from 53% to 84% over 10 months.

#### Use of MNCHN or FP services

- Three studies reported a positive effect on use of MNCHN or FP services. One study reported a greater number of infant visits first-year postpartum in the intervention group (mean = 7.5) compared to the control group (mean = 5.3); this positive effect was also recorded at both 6-month (93% vs. 88%) and 12-month (92% vs. 72%) infant follow-up sessions.
Cost

- Two studies reported cost. One study found that one intervention arm—a fixed public health clinic—was most cost-effective, resulting in a lower cost per birth averted (585 Taka per birth averted; 1USD=45 Taka) as compared to other intervention (1761 Taka) and control (830 Taka) arms. The other study found that the average cost per service declined from US$4.12 to US$2.54 over three years of integrated services.

Effectiveness

- Eleven out of the 14 studies that measured intervention effects on family planning use reported positive results and reported an increase in family planning use among intervention groups as compared to control groups or post-intervention compared to pre-intervention, although this difference was not always statistically significant. Among the remaining three studies, two reported no effects and one had mixed results.
- Integrated services resulted in fewer pregnancies or repeat births among three of the four studies that measured it.
- Among the four studies that measured breastfeeding duration, two reported positive results, and two reported no effect.
- Three studies measured indicators of infant growth, and two among these reported positive results of integrated services on infant growth.
- No studies reported abortion, unmet FP need, or stigma as outcomes.

Rigor

- The rigor of the included studies was mixed. Out of a score of 9 points, six studies had a low score of 1-3; eight studies had a medium rigor score of 4-6; and two studies had a high score of 7 or above.

Promoting and inhibiting factors

- A number of factors promoting the success of integrated services were reported, including coordination and communication between different services providers, linkages with the community, male involvement, high staff retention, provider training, community-based distribution of services, home visits by providers, patient-centered model of care, simple health education and referral messages, provision of integrated services at a single location, and availability of resources, equipment and provider training.
- A number of factors inhibiting the success of integrated services were also mentioned. These include political instability, funding shortages, complex intervention designs requiring high commitment from clients, barriers to accessing care, cultural norms regarding gender, childbearing and fertility, poor quality provider training, lack of coordination among providers, hostility among providers to change their practices, and costs and logistics.

Case Study: Evaluation of Two Distinct Community-based Approaches to MCH-FP delivery – The Navrongo Project in Ghana (Debpuur 2002; Pence 2007)

The Navrongo Community Health and Family Planning project, a high quality randomized controlled trial, was conducted in 1994 in the Navrongo Region of northern Ghana. This project employed two distinct community-based approaches to the delivery of FP and basic primary care in addition to standard Ministry of Health clinic-based services. The intervention had four arms. (1) Nurse outreach: Community health nurses were trained to offer doorstep services including treatment of childhood illnesses, immunizations, and provision of non-clinical FP methods (oral contraceptives, condoms and injectables). (2) Zurugelu: Traditional social cooperation (“zurugelu”) was used to mobilize support for community health and FP services. Health-care action committees were formed with councils of village elders, mobilizing traditional peer networks. Community health volunteers provided basic health care,
reproductive health education, outreach to men, and non-clinical contraceptives. (3) A combined nurse outreach and zurugelu approach. (4) A control arm consisting of the existing clinic-based MOH services. Both delivery approaches (study arms 1 and 2) had positive effects, while the combined approach (arm 3) was more effective across select outcomes. The unadjusted fertility decreased in all three intervention arms. Both the nurse outreach and the zurugelu intervention significantly reduced parity progression relative to the comparison area in every year. The combined approach was greater than each approach separately, demonstrating that each arm has an additive effect on fertility reduction. Moreover, the combined approach was associated with consistently higher levels of modern contraceptive use for the first three years, but there was no apparent effect in the fourth year and no effect if the two approaches were implemented independently. The overall contraceptive prevalence, however, was still quite low at the end of four years of study exposure suggesting that factors external to the intervention were affecting fertility. In terms of intervention effects on child mortality, the results varied by study arm. The nurse outreach approach resulted in a decrease in under-five, early child, and infant mortality, while both the zurugelu and combined approach resulted in an increase in child mortality in all age groups. Authors felt the presence of outreach workers in the zurugelu and combined approach may have diverted health-seeking behavior away from skilled medical care available in sub-district clinics. This could have been particularly unfavorable for two health conditions, acute respiratory infections and diarrheal disease, common in the second year of life. Mobilization of MOH resources to provide services within the community ensured greater access to FP. Additionally, by engaging with community leaders, including men, the zurugelu approach directly responded to cultural barriers that women face in accessing and utilizing modern contraception. Minor and temporary lapses in project intensity may have influenced the widespread discontinuation of contraceptive methods. The authors conclude that a comprehensive community-mobilization approach to the provision of FP services can have a favorable impact even in a traditional setting that is widely viewed as being incompatible with FP program success.

Maternal and Infant Nutrition and Family Planning Services

<p>| Locations | 1 in Chile | 1 in Nepal |
| | 1 in Honduras | 2 in Bangladesh |
| Interventions | • All interventions integrated some form of maternal or neonatal/infant child care service, with services to specifically improve neonatal/infant or maternal nutritional status, with family planning education and counseling. The services offered included encouragement of breastfeeding, infant vaccinations, immunizations, and other basic preventative care. | |
| | • Two studies included provision of non-clinical contraceptive methods. | |
| | • Two studies were conducted exclusively in clinic settings. | |
| | • The remaining three studies included home visits and a clinic component. In these three studies, trained community health workers visited women in their homes offering services such as basic prenatal care, immunizations, iron/folic acid nutritional supplementation, distributing safe delivery kits, encouraging breastfeeding and family planning, and providing non-clinical contraceptive methods. In addition, in one study (six peer-reviewed articles report on this study) health centers were established to offer emergency obstetric care, treat minor pregnancy and delivery complications, conduct normal deliveries, and refer cases with serious complications to the hospital. In another study, health education emphasizing breastfeeding was offered at the maternity clinic before discharge, while in the third study after home visits women were encouraged to visit health centers for all essential reproductive, maternal, and child health care needs, nutritional services, and basic curative and preventive care. | |
| | • All five intervention studies simultaneously integrated MNCHN and FP services. | |
| Study Designs | 1 randomized controlled trial | 1 serial cross-sectional study |
| | 2 non-randomized trials | 1 multiple evaluations (2 cross-sectional) |</p>
<table>
<thead>
<tr>
<th>Findings</th>
<th>Reported Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health outcomes:</strong> Mortality, morbidity, pregnancy, infant/child growth</td>
<td><strong>Behavioral outcomes:</strong> Family planning use, breastfeeding</td>
</tr>
<tr>
<td><strong>Process outcomes:</strong> Vaccination coverage, attended or safe deliveries, use and coverage of MNCHN or FP services, quality of services, cost/cost-effectiveness</td>
<td></td>
</tr>
</tbody>
</table>

### Coverage
- Two of the studies reported on vaccination coverage, and both found the integrated intervention had no effect on vaccination coverage. One of the two studies also reported on coverage of primary care services and found an increase.

### Quality of care
- Two studies reported on the effect of integration on quality of care, and both found that quality improved.

### Use of MNCHN or FP services
- Four of the five studies measured changes in use of MNCHN and FP services as a result of the integrated intervention, and all four found an increase in use.

### Cost
- One study reported on cost and showed that the average cost per birth averted in the intervention group was lower and ranged from US$171-240 compared to US$220-298 in the control group.

### Effectiveness
- All five studies measured family planning use with three studies reporting positive results due to the intervention, one study reported no effect and one study reporting mixed effects with family planning use increasing over time in both the intervention and control groups. For the three studies that reported positive outcomes, one study found that family planning use increased from 28% to 53% in the intervention group, another study found family planning use was 35% in the primary intervention group compared to 27% in the control group, and in the other study family planning use increased from 9.2% to 46% over two years.
- For breastfeeding, one study found no effects of the intervention and the other study found positive results with 74% of the intervention group still fully breastfeeding at six months postpartum compared to 10% of the control group.
- Two of three studies measuring infant growth reported no effect of the intervention on infant growth (height and weight for age) while one study reported positive effects, finding that infant weight was 10,093g in the intervention group compared to 918g in the control group.
- Among the three studies that measured the effects of integrated services on infant mortality, one reported a significant difference between the intervention and control arms with mortality rates being significantly lower in the intervention arms; while the other two studies found no effect.
- Two peer-reviewed articles reporting on the same study measured the effects of integrated services on maternal mortality, but only one of these found results and reported a significant reduction in maternal mortality rates coupled with significantly higher utilization of maternity clinics for assisted delivery in the intervention arm as compared to the control arm.
- No studies reported on abortion, condom use, unmet FP need, or stigma.

### Rigor
- The rigor score of these included studies was generally low. Out of a possible score of 9, three studies had a low score of 1-3, and two studies had a medium score of 4-6.

### Promoting and inhibiting factors
- A number of factors promoting the success of integrated services were reported, including coordination and communication between different service providers, linkages with the
community, community-based distribution of services, patient-centered model of care, reduction in costs to clients, and availability of resources, equipment, and provider training.

- A number of factors inhibiting the success of integrated services were also mentioned. These include training programs that were time intensive and hence limited provider participation, short duration of interventions, provider unwillingness to change practices and coordinate amongst each other, infrastructural costs and challenges, lack of an efficient referral system, as well as inefficiencies at higher health system levels.

Case Study: A Clinic in Chile Has Mixed Results Implementing Comprehensive Services, Including Breastfeeding and Maternal and Infant Nutrition (Alvarado 1999)

Consultorio San Luis de Huechuraba (CSLH), a non-government clinic in a poor neighborhood in Santiago, provided integrated FP and maternal and infant care. The intervention had been proven efficacious elsewhere, so the objective of CSLH was to evaluate it in an area of extreme poverty. All four providers were trained in breastfeeding and contraceptive management and worked as a team to provide care to mothers and infants. Two were community health workers who conducted home visits during pregnancy and visits to the maternity wards. They were trained in pregnancy care, FP, prevention of STDs/HIV, breastfeeding, infant care, and maternal and infant nutrition. Mothers and infants were seen during the same visits every 10 days in the first month postpartum and at monthly intervals thereafter for the first year. The intervention was evaluated by comparing it to a public clinic in a similar neighborhood nearby. Outcomes of the evaluation were mixed, with no effect on contraceptive use and unintended pregnancies, and positive results for breastfeeding, infant growth, and use and quality of MNCHN or FP services. Contraceptive acceptance was similar among clients attending both clinics, but methods chosen differed, as did contraceptive discontinuation. Number of unintended pregnancies was higher among the CSLH clinic clients, although this difference was not statistically significant. Breastfeeding rates and infant growth were significantly better among women attending CSLH compared to women at the control clinic, and infant morbidity rates were lower. All method acceptors attended the CSLH until the end of the year, whereas 21% of those attending the public clinic were considered lost to follow-up. Clients at CSLH reported feeling supported in choosing from a variety of available contraceptives free of charge, and care among providers was coordinated. Although the intervention clients spent more time at CSLH because of the greater number of scheduled visits, they felt the time was well-spent, and they felt empowered in their choices. However, the intervention required significant investment in provider time and a high level of commitment from clients. The study authors concluded that this type of program could be built into the national program to improve maternal and child health outcomes.

ANALYSIS OF INTERVENTIONS EVALUATED BY A RANDOMIZED CONTROL TRIAL DESIGN

A separate analysis was conducted of those interventions that were evaluated by the most rigorous study design, a randomized control trial.

| Locations | 1 in USA  
1 in Italy  
1 in Australia | 1 in Syria  
1 in Nepal  
1 in Ghana  
1 in China |
| Interventions | ▪ Four studies focused on home visits with new mothers and their infants, providing postnatal care and education, including FP education and/or provision.  
▪ Two studies focused on women in post-abortion care settings receiving FP at the clinic compared to referring them to other sites for FP services. |
One study focused on nurse and community outreach providing post-natal care and education, including FP education and provision.

Three studies were conducted in participant homes and four studies were conducted in hospital or clinical settings.

Only two of the 7 studies included provision of FP commodities.

### Reported Outcomes

| Health outcomes: Infant mortality; infant and maternal morbidity; pregnancy; unplanned pregnancy; infant/child growth |
| Behavioral outcomes: Family planning use; condom use; induced abortion; breastfeeding |
| Process data/outcomes: Vaccination coverage; quality of services |

### Findings

**Coverage**
- Only one study reported in changes in coverage of MNCHN-FP services. It found that vaccination coverage did not change as a result of integration.

**Quality of care**
- Two of the seven studies reported on quality of services; neither study reported an effect on quality of services due to the intervention.

**Use of MNCHN or FP services**
- No studies reported use of MNCHN or FP services.

**Cost**
- No studies reported on cost or cost-effectiveness.

**Effectiveness**
- Three studies reported on infant mortality and found no effect of the intervention on this outcome.
- Two studies reported on morbidity; one study found a positive effect on infant morbidity (80% lower adverse neonatal outcomes in the intervention group) and one study reported no effect on various maternal morbidity outcomes.
- All 7 of the included studies reported on family planning use; four studies found no effect due to the intervention. Of the three that found an effect, one study found that those in the intervention group were 1.35 (p=0.007) times more likely to use reliable contraception at 6 months postpartum, another study found family planning use was 35% in the primary intervention group compared to 27% in the control group, and in the final study 80% of those in the intervention group reported using family planning at follow-up compared to 38% in the control group.
- No studies reported on STI incidence, unmet FP need, attended or safe deliveries or stigma.

**Rigor**
- The rigor score of the 7 included RCTs was high. Out of a possible score of 9, the average score was 6.3 (range 5-8).

**Promoting and inhibiting factors**
- Promoting factors included: staff retention, high community involvement, personality of the midwives involved in the intervention and their ability to help mothers coordinate care more effectively during home visits, mobilization of clinics to the community level, using a patient-centered model, the provision of FP methods free of charge, and face-to-face interactions.
- Inhibiting factors included: results from home visits were not always communicated to the primary care provider, interventions short in length not able to have optimal impact, lack of sustainability of interventions, necessity of having midwives who are from the local community, difficulty in working with inherited practices and attitudes, many challenges related to promoting continued breastfeeding, overwhelmed staff workloads, and lack of male partner involvement.

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**ANALYSIS OF CO-LOCATED VERSUS REFERRAL SERVICES**

A separate analysis was conducted of studies that specifically compared services that were offered in the same place and services that referred clients to another location for certain services. The studies below
all had at least two arms, one with co-located services and one with clients referred elsewhere for certain services.

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<tr>
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<tbody>
<tr>
<td>Locations</td>
<td>1 in Italy</td>
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<tr>
<td>Interventions</td>
<td>▪ All studies analyzed interventions that compared co-located services (i.e. provision of MNCHN and FP services by the same provider or in the same location) with referral services services (i.e. referring patients to another location for FP services).</td>
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<td>▪ Four studies met inclusion criteria (three are PAC-FP integration studies); all of these studies reported outcomes comparing the co-located vs. referral services. (One study in Nepal compared co-located vs. referral services but did not report outcomes comparing co-located vs. referral services.)</td>
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<tr>
<td>Reported Outcomes</td>
<td>Health outcomes: Maternal morbidity; pregnancy; unplanned pregnancy</td>
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<td>Behavioral outcomes: Family planning use</td>
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<tr>
<td></td>
<td>Process data/outcomes: Use of FP or MNCHN services; quality of services; costs</td>
</tr>
</tbody>
</table>

**Findings**

**Coverage**
- No studies reported on coverage of MNCHN or FP services.

**Quality of care**
- No studies reported on quality of care.

**Use of MNCHN or FP services**
- Two studies reported on use of MNCHN or FP services; one found an increase in use as a result of co-located services, whereas the other found mixed effects.

**Cost**
- Only one study reported on cost, and found that although co-located services were more cost-effective they also required higher upfront costs.

**Effectiveness**
- All four studies reported on family planning use. Two studies reported that family planning use was higher for co-located services compared to referral services. The other two studies found mixed outcomes due to co-located services.
- Only two of the studies reported on any other health or behavioral outcomes. One found that unplanned pregnancies and abortions did not change due to co-located services, but that condom use increased. The other found that morbidity decreased as a result of co-located services but that there was a mixed effect on pregnancy outcomes.

**Rigor**
- The average rigor score was 4.5 out of nine (range: 2-7).

**Promoting and inhibiting factors**
- Promoting factors included: a culturally appropriate and patient-centered model of care, timing of the FP intervention (before termination of pregnancy), provider acceptance of new staffing and responsibilities, existing onsite availability of FP resources and free contraceptives, male partner involvement, and having a multi-component intervention.
- Inhibiting factors included: lack of sustainability, lack of coordination between units and poor patient flow, high cost of provider training and high staff workload, and cultural limitations around male involvement.

**GAPS IN THE RESEARCH**

- Few studies had rigorously designed evaluations. Only seven studies were randomized controlled trials. Many studies were cross-sectional (with a comparison group) or serial cross-sectional designs and had low rigor scores.
- Few studies specifically compared integrated MNCHN and FP services to the same services offered separately.
- Few studies examined family planning services integrated with maternal and infant nutrition services.
• All studies targeted women; only three studies also targeted men even though men in most resource-limited and traditional settings have an influence on fertility decisions and actions. Four studies explicitly recommended greater involvement of men, indentifying the lack of male involvement as a limiting factor in study success.

• Few studies reported on cost data and only one study measured cost-effectiveness, despite the fact that cost-effectiveness remains a key argument in favor of integration. Furthermore, few studies measured coverage of services as an outcome.

• No studies measured changes in the cost to clients, including transportation and time. Few studies asked clients what they wanted or sought to determine how clients make decisions.

• No studies reported negative results of integration. This is likely due to publication bias, as often negative results are not reported. However, much can be learned from integration interventions that fail to achieve desired results, so these studies should be reported widely.

• Few of the studies provided sufficient information about the interventions to allow them to be replicated.

• Few studies sought to scale up a successful integration intervention and measured and compared the success of the intervention across a variety of settings.

**RECOMMENDATIONS FOR FUTURE RESEARCH**

The rigor score criteria used in this review can provide a guide for improving the quality of future evaluations of integrated MNCHN and FP services. Using these techniques will allow a basis of comparison for post-intervention evaluation data and will also reduce bias and confounding. Three techniques offer a basis of comparison: following a cohort of subjects over time; collecting pre-intervention data to compare to post-intervention data; and including a control or a comparison group.

A number of techniques can be used to reduce bias and confounding in evaluation studies: randomly assigning participants to the intervention group; randomly selecting subjects, or including all subjects who participated in the intervention, for assessment; retaining as many subjects in the evaluation over time as possible; having comparison groups that are equivalent at baseline on socio-demographic and outcome measures; and using data analytic techniques that control for potential confounders. Although it is not always possible to use all of these techniques, employing as many as feasible will improve the quality of the evaluation and make the results more reliable.

**STRENGTHS AND LIMITATIONS OF THE REVIEW**

The two main strengths of this review are its broad scope and systematic methodology. The entire field of MNCHN and FP linkages was included in the review, and standard Cochrane methods were used to systematically review and analyze this body of evidence.

The strengths of this review are also its limitations. Because this review was so broad in scope, it was difficult to synthesize data due to the enormous heterogeneity in the types of studies included. The included studies were heterogeneous in terms of their interventions, populations, research questions and objectives, study designs, rigor, and outcomes.

Publication bias is an inevitable limitation of systematic reviews of the literature, as studies with negative findings are less likely to be published. In addition, given the nature of distribution of unpublished reports, our search strategy may not have captured all of them.

**CONCLUSIONS**
MNCHN and FP service integration shows promise in improving a wide variety of health, behavioral and process outcomes. However, significant evidence gaps remain. Rigorous research comparing outcomes of integrated with non-integrated services, including cost, mortality and pregnancy-related outcomes, is greatly needed to inform programs and policy.
**GENERAL REFERENCES**


REFERENCES OF INCLUDED STUDIES


Contributors

This document was prepared for the U.S. Agency for International Development (USAID) by; Debbie Bain Brickley, Hana Azman, Karuna Chibber, and Gail Kennedy of the Cochrane Collaborative Review Group on HIV Infection and AIDS (Cochrane HIV/AIDS Group) at the Prevention and Public Health Group, Global Health Sciences at the University of California, San Francisco; Caitlin Kennedy from the Johns Hopkins Bloomberg School of Public Health; Mary Lou Lindegren from Vanderbilt University; and Alicen Spaulding from the University of Minnesota School of Public Health. Also from UCSF: Tara Horvath of the Cochrane HIV/AIDS Group assisted with database searching; Sara Newmann of the Department of Obstetrics, Gynecology and Reproductive Sciences provided guidance. Maureen Norton, Mary Ann Abeyta-Behnke, Milly Kayongo, and Carolyn Curtis from USAID formed the advisory board to provide overall guidance and oversee the production of this document. Maggie Rajala of GH Tech provided administrative support.
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Study Design</th>
<th>Intervention</th>
<th>Sample Size</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Agha, 2007</td>
<td>Nepal</td>
<td>Serial cross-sectional</td>
<td>A franchising network that offered FP services and referrals within the context of antenatal and postnatal care</td>
<td>Exit surveys: 1618 Before: 885 After: 733 HH surveys: 1907 Before: 941 After: 966</td>
<td>There was an increase in client satisfaction at the intervention compared to control clinics which translated into return visits at the intervention clinics. No significant differences were recorded in FP use or ANC uptake between the intervention and control clinics. However, the authors reported that the intervention had a statistically significant positive effect on women receiving FP from medical stores or pharmacies.</td>
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<tr>
<td>Alvarado, 1999</td>
<td>Chile</td>
<td>Non-randomized trial - group</td>
<td>Breastfeeding and contraceptive services offered at a clinic providing integrated maternal and infant care</td>
<td>Before: 400 Int: 200 Control: 200 After: 380 Int: 200 Control: 180</td>
<td>FP acceptance was similar among clients attending both clinics, but methods chosen differed, as did FP discontinuation. Number of unintended pregnancies was higher among intervention clinic clients, although this difference was not statistically significant. Breastfeeding rates and infant growth were significantly better among women attending the intervention clinic compared to women at the control clinic, and infant morbidity rates were lower. Loss to follow-up was higher in the control group.</td>
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<tr>
<td>Amin, 2001</td>
<td>Bangladesh</td>
<td>Non-randomized trial – group</td>
<td>An essential services package offering FP, immunizations, basic curative services, etc. through micro-credit volunteers</td>
<td>1992: 656 1997: 3826 1998: 1768</td>
<td>Contraceptive prevalence rate (CPR) nearly doubled within the intervention area over the study period, and the CPR in the intervention area post-intervention was much higher compared to the control area. Across both groups, infant mortality declined and immunization coverage increased. The intervention area had greater availability and utilization of modern doctors, pharmacies, health centers, etc. compared to the control area. Availability of traditional providers was still strong in both areas.</td>
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<tr>
<td>Barnet, 2007</td>
<td>USA</td>
<td>Randomized trial - individual</td>
<td>A home visit program for pregnant and parenting adolescents to reduce repeat pregnancies</td>
<td>Total: 84 Int: 44 Control: 40</td>
<td>Home visiting intervention significantly improved parenting attitudes and beliefs relative to usual care program. It also resulted in more consistent condom use (AOR: 3.6, 95% CI 0.9-14.4), but there was no difference in repeat pregnancy, repeat birth, hormonal FP, and depressive symptoms.</td>
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<tr>
<td>Bashour, 2008</td>
<td>Syria</td>
<td>Randomized trial – individual</td>
<td>Home visits to offer support, including FP services, to women who had recently given birth (4 visits, 1 visit, or no visits)</td>
<td>Total: 876 Group A (4 visits): 285 Group B (1 visit): 294 Control (0 visits): 297</td>
<td>A significantly higher proportion of mothers reported exclusively breastfeeding at 4 months (p=0.023), yet current breastfeeding and breastfeeding at 4 months postpartum were not statistically significantly different outcomes. Maternal pallor and sleep disorders were more often reported in groups A and B compared with group C (control). The three arms did not differ in their current FP or postpartum care uptake.</td>
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<tr>
<td>Billings, 2008</td>
<td>Mexico</td>
<td>Manual vacuum</td>
<td>Total: 803</td>
<td>Women in the two PAC groups (groups A &amp; B) rated the quality of services they</td>
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<tr>
<td>2003</td>
<td>Cross-sectional</td>
<td>aspiration and provision of family planning methods for post-abortion care</td>
<td>Group A: 251 Group B: 270 Control: 282</td>
<td>received more highly than did those receiving sharp curettage standard care. The PAC women who left the hospital with a FP method felt like they were better informed and had played a role in choosing it.</td>
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<tr>
<td>Bolam, 1998</td>
<td>Nepal</td>
<td>Randomized trial – individual</td>
<td>Education on breastfeeding, FP, immunizations, and treatment of infant illnesses offered to postpartum women</td>
<td>Total: 540 Group A: 135 Group B: 135 Group C: 135 Control: 135</td>
<td>Health education given after delivery and three months later did not improve mothers’ knowledge and practices of infant care. Mothers who received health education at birth (groups A and B) were slightly more likely to use FP at 6 months after birth as compared to mothers who received no health education at birth (groups C and D) (OR=1.62, 95% CI 1.06-2.50). Otherwise, there were no significant differences between groups for outcomes of infant feeding, care, or immunization.</td>
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<tr>
<td>Bossyns, 2002</td>
<td>Niger</td>
<td>Serial cross-sectional</td>
<td>FP offered within curative and under-fives consultations, and increasing provider responsiveness to clients</td>
<td>Total: NR Before: NR After: 3953</td>
<td>All reported outcomes, including the number of new acceptors, couple-years of protection, and index of uptake of contraception, showed a marked increase in the year after the intervention compared to the 3 years before the intervention. Outcomes increased by a factor of 2.0 to 2.7 in the year after the intervention compared to 3-4 years before the intervention. There was a peak of uptake in the month after the intervention (end of year 4), which leveled off afterward, yet remained higher than before.</td>
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<tr>
<td>Cissé, 2004</td>
<td>Senegal</td>
<td>Serial cross-sectional</td>
<td>Post-abortion care services were implemented to include manual vacuum aspiration, FP, and comprehensive reproductive health care</td>
<td>Total: 1013 Before: 374 During: 457 After: 182</td>
<td>The number of patients treated for incomplete abortion increased by 22%. The number of MVA procedures performed and the number of patients utilizing contraception increased from 0 at baseline to 56% (MVA) and 20% (contraception). The quality of services improved, as hospitalization lasted a mean of 4 hours compared with 48 hours at baseline, and the proportion of patients referred to the regional hospital for complications fell from 35% to 7%. The mean direct average cost fell by 3,500 CFA Francs. Six months after the program ended, the level of utilization of PAC services continued to increase (by 11%) and the proportion leaving with FP reached 33%.</td>
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<tr>
<td>David, 2007</td>
<td>Russia</td>
<td>Serial cross-sectional</td>
<td>Postpartum and post-abortion care providers were trained in providing FP counseling</td>
<td>Total: 1575 2000: 489 2002: 559 2003: 527</td>
<td>Some aspects of project interventions were implemented effectively, but they did not diminish the number of repeat abortions. The intervention resulted in a significant decline in the proportion of clients reporting unintended pregnancies during FP use. The proportion of clients who had chosen a method of contraceptive before discharge was high in all 3 years. Study also reported a significant increase in abortion clients’ receipt of FP services such as counseling on FP and receipt of written information. There are directional but not statistical differences in discussion with doctor about FP and being told when to make</td>
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<tr>
<td>Debpuu r, 2002; Pence, 2007</td>
<td>Ghana</td>
<td>Randomized trial – group</td>
<td>Nurse outreach and traditional social cooperation (zurugelu) were used to offer doorstep delivery of treatment of childhood illnesses, immunizations, and FP</td>
<td>Total: 8998</td>
<td>Follow-up visits over the 3 years. Both the nurse-outreach (1) and zurugelu (2) interventions significantly reduced parity progression relative to the comparison area in every year. The combined strategy (3) was greater than each intervention separately. For the combined strategy, contraceptive prevalence rate increased from a baseline of 3.4% in 1993 to 8.2% in 1999. In nurse-outreach areas, under-five child mortality fell by 14% during 5 years of program implementation compared with before, with reductions in infant (5%), early child (18%), and late child (39%) mortality. The zurugelu intervention was associated with a 14% increase in mortality, primarily driven by a 135% increase in early child mortality. The combined area saw an 8% increase, with small increases in all age groups. Mortality in the control area fell by 4% during the same period.</td>
</tr>
<tr>
<td>Delvaux, 2008</td>
<td>Cambodia</td>
<td>Before-after</td>
<td>Post-abortion services were integrated into a government clinic, comprising antenatal care, FP, and management of STIs</td>
<td>Total: 2224</td>
<td>After the introduction of the intervention, the mean number of clients attending per month increased. Fewer women sought unsafe and mobile abortion services; more women sought the skilled facilities at the intervention clinic. The rate of complications from the interventions fell from 9.4% in 2002 to 1.3% in 2005. Finally, a greater proportion of clients (40%) accepted contraception after the intervention.</td>
</tr>
<tr>
<td>Douthwaite, 2005</td>
<td>Pakistan</td>
<td>Cross-sectional</td>
<td>Doorstep delivery of childhood immunizations, infant growth monitoring, FP, and treatment of minor ailments</td>
<td>Total: 4277</td>
<td>A regression analysis, controlling for a number of socioeconomic indicators (such as poverty, adult literacy and women’s empowerment), found a significantly higher percentage of women in the intervention areas were currently using a reversible FP method compared to the control areas (OR=1.50). There were large increases in the ever-use of contraceptives in served areas since the lady health workers began, and these increases are larger than those in the control population and in the national rural population as a whole.</td>
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<tr>
<td>Fullerton, 2003</td>
<td>Ghana</td>
<td>Case-control</td>
<td>FP providers were trained in provision of STI and PAC services</td>
<td>Total: 43</td>
<td>Study results demonstrated a higher mean of new clients and a statistically significant higher mean of continuing clients in the case facilities as compared to control facilities. PAC services were offered only in case facilities, suggesting that there were positive benefits of providing training in integrated services to providers from case facilities.</td>
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<tr>
<td>Hunting, 1994</td>
<td>Togo</td>
<td>Serial cross-sectional</td>
<td>Referrals for FP services were provided during childhood immunization sessions</td>
<td>Total: 2179</td>
<td>Number of new FP and total FP clients increased in the intervention group, but not in the control group. Both intervention and control groups increased the average number of childhood vaccine doses, although the control group increased more than the intervention group (comparison not made by authors).</td>
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<td>Study</td>
<td>Country Study Design</td>
<td>Intervention</td>
<td>Sample Size</td>
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| Johnson, 2002 | Zimbabwe Non-randomized trial – group | Free, ward-based FP services and referrals were provided prior to discharge from post-abortion care | Total: 2228  
Int: 1355  
Control: 873 | At each visit, significantly more women in the intervention group reported using a highly effective contraceptive compared to the control group, adjusting for baseline marital status and contraceptive use (p<0.0001). The incidence of unplanned pregnancies and repeat abortions over the 12-month follow-up period was more than double in the control group compared to the intervention group; this effect was statistically significant for unplanned pregnancies (p<0.0001) but not for repeat abortions (p=0.23). |
| Mahomed, 1997 | Zimbabwe Serial cross-sectional | FP counselors were hired to offer FP services at post-abortion care sites | Total: 2050 | Whereas before the intervention, some general information regarding FP may have been given, after the intervention 97% versus 49% of the women chose a method and 92% versus 34% actually went home from hospital with some form of FP method. |
| Murray, 1990 | Kenya Cross-sectional | Health education, contraceptives, and immunizations were offered in a doorstep strategy | Total: 5351  
Int: 1545  
Control: 3806 | On average in Kenya (control group) only 17% of fertile women practiced family planning, with 42.5% of women in Chogoria (intervention group) reporting using any method of contraception. Community-based distribution of FP commodities may be associated with a marked decrease in fertility rate and family size within a relatively short period. |
| Nobili, 2007 | Italy Randomized trial – individual | Women seeking a termination of pregnancy received patient-centered FP counseling | Before: 43  
After: 41 | The patient-centered FP counseling intervention resulted in a significant increase in women’s knowledge about, and favorable attitudes toward, contraception. The percentage of women using effective contraceptives increased from 20% to 80% in the intervention group, compared to 19% to 38% in the comparison group. |
| Paxman, 2005 | India Serial cross-sectional | Community-based FP information, antenatal and postnatal care, and immunization services | Total: 784,400 | Overall, improvements with regards to behavioral change were seen across all three intervention sites. By early 2002, as FP use increased to 66% overall in one of the intervention areas, the use of pills and condoms nearly doubled, whereas sterilization (male and female) nearly tripled. |
| Quinlivan, 2003 | Australia Randomized trial – individual | A postnatal home-visiting service for teenage mothers offered education about FP, vaccinations, and breastfeeding | Total: 136  
Int: 71  
Control: 65 | Postnatal home visits were associated with a reduction in adverse neonatal outcomes (RR=0.22, 95% CI 0.02-0.98) and a significant increase in use of reliable contraception (RR=1.35, 95% CI 1.09-1.68) at 6 months postpartum. However, there was no significant increase in breastfeeding or completion of infant vaccination schedules associated with home visits. |
| Routh, 2001; Routh | Bangladesh Non-randomized | A comparison of doorstep, clinic and community delivery of FP | Before: 1600  
After: 1600 | FP use increased slightly in both community- and fixed-sites but remained the same in the door-to-door delivery group. Average daily attendance at fixed-site clinics improved with the greatest increase at the primary health care clinic. The |
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<th>Study</th>
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<tr>
<td>2000</td>
<td>trial – group</td>
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<td>services, with and without antenatal and postpartum services</td>
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<td>fixed-site strategy was more cost-effective than the other strategies, as measured by costs associated with number of births averted and QALYs gained. Costs of services were much lower in the fixed-site strategy than those in the other two strategies. Quality-wise, clinics provided a more holistic approach to addressing clients’ needs in comparison to the community-based sites and door-to-door delivery method.</td>
</tr>
<tr>
<td>Sathar, 2005</td>
<td>Pakistan</td>
<td>Serial cross-sectional</td>
<td>Client-centered services that integrated infant health, safe motherhood, and FP within reproductive health care</td>
<td>Providers Before: 78 After: 77 Community workers Before: 72 After: 86</td>
<td>SAHR (quality) score declined in both the intervention and controls groups post-intervention. However, despite the decline in quality of care found for both groups between pre- and post-intervention time periods, both types of providers in the experimental areas were performing better than providers in the control areas, as measured by their scores for the four SAHR items.</td>
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<tr>
<td>Solo, 1999</td>
<td>Kenya</td>
<td>Non-randomized trial – group</td>
<td>Three different post-abortion FP models were compared (1: FP on gyn ward by gyn staff; 2: FP on gyn ward by FP staff; 3: FP at FP clinic by FP staff)</td>
<td>Before: 481 After: 319</td>
<td>More patients from model 1 settings received FP counseling and a method prior to leaving the hospital than patients from model 2 or model 3 settings. In total, the number of patients who decided to begin using contraceptives increased from 22% at pre-intervention to 68% at post-intervention, while the number of providers trained in postabortion FP increased from 6% to 27%. However, these outcomes were not stratified by model.</td>
</tr>
<tr>
<td>Sultan, 2002</td>
<td>Pakistan</td>
<td>Cross-sectional</td>
<td>Doorstep delivery a immunization, growth monitoring, FP, and health education</td>
<td>Total: 4676</td>
<td>Use of reversible modern methods of contraception was significantly higher in areas having good access to female community workers than in areas with little or no access, and this persisted when adjusted for a wide range of community, individual, and household characteristics. Access to private practitioners who offer contraceptive services also had a significant effect on use. No effect was detected on access to static FP services. Availability of schools also had a significant effect on contraceptive uptake, but presence of other modern institutions or proximity to a town had no effect.</td>
</tr>
<tr>
<td>Vernon, 1993</td>
<td>Honduras</td>
<td>Serial cross-sectional</td>
<td>A client-oriented antenatal program that included FP and breastfeeding, and integrated postpartum and infant care</td>
<td>Total: 1440 Feb: 614 Oct: 344 Dec: 482</td>
<td>Study suggests overall improvement in women’s knowledge of RH services and satisfaction with the services provided. Study also showed an increase in contraceptive acceptance according to multiple data sources: perinatal clinic records, 40-day clinic records, and client exit surveys. The program appears to have reached a higher proportion of women (from February to December 1991) in offering contraceptive methods.</td>
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<tr>
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<td>Warren, 2010</td>
<td>Kenya Serial cross-sectional</td>
<td>A program offering continuum of care from pregnancy through postpartum that included FP counseling, breastfeeding, and newborn care</td>
<td>Total: 249</td>
<td>The quality of care index score increased significantly for both maternal health and infant health at the 6-week postnatal visit after the introduction of the postnatal care package. However, the quality of care still remained lower than desired. More women accepted a FP method at 6 weeks postpartum before the intervention (35%) compared to after (63%).</td>
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<tr>
<td>Zhu, 2009</td>
<td>China Randomized trial – group</td>
<td>Two packages (essential or comprehensive services) of post-abortion FP services were implemented</td>
<td>Total: 2336</td>
<td>Neither package changed contraceptive knowledge, but both packages resulted in increased use of any contraceptive method. Package B (comprehensive services) had a stronger effect on increasing use of effective contraceptive methods (AOR = 2.03 95% CI 1.04-3.98) and consistent and correct use of condoms (AOR = 2.32, 95% CI 1.55-3.46). Rates of unwanted pregnancies and induced abortions were lower at package A than package B hospitals at 6 months follow up, although this difference was not statistically significant.</td>
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<tr>
<td>Matlab MCH-FP program (6 articles)</td>
<td>Bangladesh Several evaluations (all cross-sectional or serial-cross-sectional)</td>
<td>Doorstep delivery of antenatal care and nutrition, FP, safe delivery kits, and referral for complications</td>
<td>Range: 300 to 125,070</td>
<td>There appeared to be a sustained decrease in perinatal mortality and direct obstetric deaths in Matlab district compared to the comparison area. Children under the age of 5 living in Matlab district were healthier (measured by height-for-age) than children living in the comparison area, although this difference was statistically significant for girls and not boys. Contraceptive prevalence rates showed greater improvement over 10 years time in Matlab district (from 3.0 to 44.1) compared to the control area (3.0 to 11.6), though statistical significance was not reported. The MCH-FP intervention was more cost-effective than the control area, measured by cost per birth averted, though average cost was higher in the former.</td>
<td></td>
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