

**A Review of the Evidence Developed for a Technical
Consultation on Expanding Access to Injectable
Contraception**

June 2009

This document was prepared in preparation for a Technical Consultation coordinated by the World Health Organization, U.S. Agency for International Development, and Family Health International held in Geneva, Switzerland. The document was prepared by Shawn Malarcher with guidance from the Technical Consultation Planning Committee. Members of the Committee included Crystal Dreisbach, Bill Finger, Kirsten Krueger, Elena Lebetkin, Shawn Malarcher, Maggwa Ndugga, Iqbal Shah, Jeff Spieler, John Stanback, and Shyam Thapa. In addition, the document benefited from input by Ian Askew, Paul Blumenthal, and Olav Meirik.

Table of Contents

Acronyms	2
Background	3
Methods	5
Description of Programs	8
Client Screening	10
Injection Safety	13
Client Counseling on Side Effects	16
Client Perspective	18
Provider Perspective	20
Uptake of Services	21
Continuation	28
References	31
Appendix 1. Search Terms	34
Appendix 2. Organizations and Individuals Contacted	35
Appendix 3. Quality Assessment Classification	36
Appendix 4. Evidence Summary by Program	39

Acronyms

CBD – Community Based Distributor
CBD FGD – Community Based Distributor Focus Group Discussion
CBW – Community Based Worker
CHW – Community Health Worker
COC – Combined Oral Contraceptive
CP – Community Promoter
CPR – Contraceptive Prevalence Rate
DMPA – Depot medroxyprogesterone acetate
HW – Health Worker
MWRA – Married women of reproductive age
NET-EN - Norethisterone enanthate
NGO – Non-Governmental Organization
RCT – Randomized Control Trial
VHW – Village Health Worker
WRA – Women of Reproductive Age

Background

The following document was prepared to facilitate deliberations for the Technical Consultation on Expanding Access to Injectable Contraceptives sponsored by the World Health Organization, the United States Agency for International Development, and Family Health International, scheduled to be held from 15-17 June 2009 in Geneva, Switzerland.

This document summarizes the results of a literature review conducted to identify research evidence and program experience relevant to the objectives of the Technical Consultation:

- To review systematically the evidence and programmatic experience on interventions designed to expand access to/provision of contraceptive injectables, focusing on non clinic-based services and programs.
- To reach conclusions on issues: (a) for which evidence is consistent and strong; (b) for which evidence is mixed; and (c) for which evidence is marginal or entirely lacking and, thus requires additional research.
- To document discussions and conclusions of the Consultation, including policy and program implications, and to disseminate these widely.

The document is organized into five main sections: background, methods, description of interventions, results, and references. The background section outlines the organization of material and objectives of the literature review.

In the following section, methods of the literature review are described including search methodologies and criteria for identification and selection of interventions and appropriate documentation. In addition, this section describes the process for assessment of methodological quality, data extraction, and data synthesis. Key terms are also defined.

The description of interventions provides a brief review of the range of projects and context included in the body of evidence reviewed. Information is provided on the context of implementation, intervention characteristics, and participants (both beneficiaries and providers).

The results section is further divided into seven topic areas:

- Client screening
- Injection safety
- Counseling on side effects
- Client perspective
- Provider perspective
- Uptake of services
- Continuation of use

Each results section includes a brief summary of methods used in assessing each topic area as well as a summary of findings. This information is also presented in tables within each section. Tables are presented for each outcome measure relevant to the topic area. For example, under

injection safety two tables are presented – one specific to injection morbidity and a second table on compliance with injection safety procedures. Finally, each section includes a set of discussion questions to facilitate small group work during the Technical Consultation. These questions were prepared to guide the review of the evidence and should be considered illustrative. Lines of inquiry should be added or eliminated by the group as needed to achieve the Consultation’s objectives.

Throughout this document evidence is referred to by “study” or “program experience”. It should be noted that the terms “research” and “study” are used to describe a broad range of data collection activities including routine project monitoring. Most of the evidence included in this document was obtained from unpublished material and was not subjected to peer review. In addition, the publication by Khuda, Kane, and Phillips (1997) provides a summary of work conducted in Bangladesh drawing on multiple studies evaluating the performance of numerous interventions.

Objectives

Objectives of the literature review were developed by the Technical Consultation Planning Committee and further refined by the availability of data. Specifically, the review focused on the following issues:

- Ability of Community Health Workers (CHW) or pharmacists¹ to achieve competency in provision of injectable contraception
- Ability of CHW, pharmacists, and/or clients² to meet injection standards related to safety and quality
- Acceptability among clients and providers of alternative³ provision of injectable contraceptives
- Long and short-term measures of program impact of CHW, pharmacy, and self-injection.

¹ Pharmacists including drug shop owners.

² Relevant for self-injection procedures.

³ Alternative provision refers to injectables provided by CHW, pharmacists, or self-injection.

Methods

Criteria for selection

The literature review is intended to provide a comprehensive summary of evidence available. Both published and unpublished materials were considered for inclusion in this review. Relevance of the material was determined based on the project or intervention description. All documented experience of alternative provision of injectable contraception⁴ was included in the review regardless of data collection methods used. Search strategies targeted community-health workers (CHW)⁵ including: community-based distributors (CBD), community health workers (CHW), community volunteers, community promoters, and village health workers (VHW). The term community-health worker (CHW) is used in this paper as an inclusive term for all of these categories of community workers. Additionally, the review sought to include the experience of pharmacy distribution programs as well as self injection as alternative approaches to expanding access to injectable contraception. Documented experience was reviewed according to these three categories - CHW, pharmacists, and self injection. Programs or research that included provision (either initial or resupply) of injectable contraceptives were included. Outcome measures of interest consisted of client screening (provider knowledge and provider proficiency), safe injection (injection morbidity and safe injection procedures), counseling on side effects, client perspective (satisfaction), provider perspective, uptake of services (utilization of services, utilization by new clients, and utilization by underserved population groups), and contraceptive (injectable) continuation rates.

Search methods and identification of programs

Search of bibliographic databases were conducted with the assistance of a librarian based on established criteria (for a complete list of search terms see Appendix 1). Search strategies were adjusted as appropriate for each database including the Cochrane Library, MedlinePlus, Popline, PubMed, RAND Books and Publications, and ReproLine. No study filter was used during the search process. Given the lack of appropriate material identified from bibliographic databases, an internet search was conducted targeting specific organizations⁶ known to support community-based workers, pharmacy distribution programs, or injectable contraceptives. In addition, experts³ in the area of community-based distribution of contraception and/or provision of injectables were contacted to assist in identification and collection of unpublished literature.

⁴ Injectables using the formulations depot medroxyprogesterone acetate, norethisterone enanthate, medroxyprogesterone acetate (MPA)/estradiol cypionate, and norethisterone enanthate (NET-EN)/estradiol valerate were included in the review (WHO/RHR and CCP, 2007). For a complete list of trade names used in the search strategy see appendix 1 on search terms.

⁵ The definition for community-based worker varies according to context specific needs and available resources. As described in previous technical working groups, the main criteria used to identify community-based workers is the involvement of the community in the selection and support of those workers (WHO, 1987)

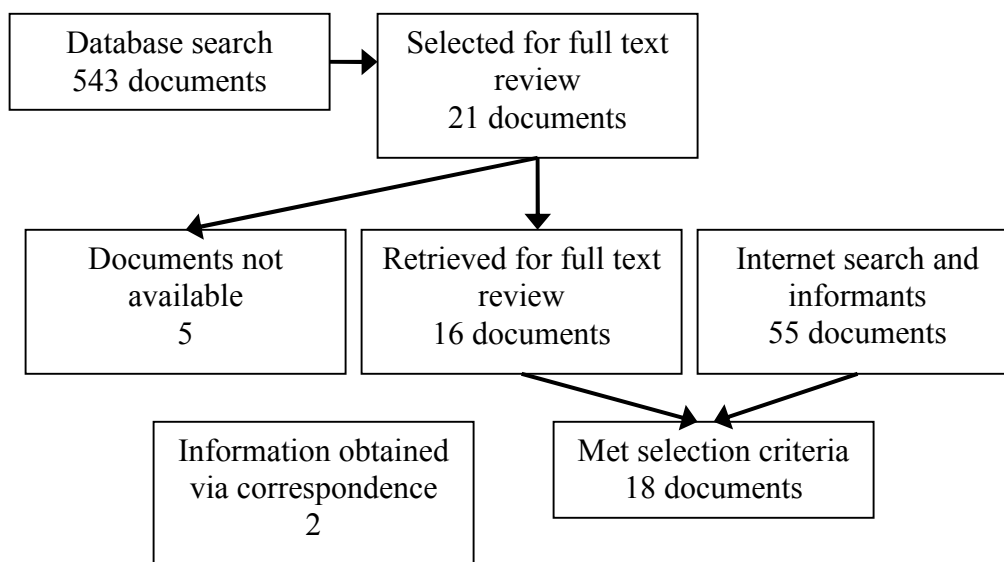
⁶ Appendix 2 includes a complete list of individuals and organizations contacted as part of the search process.

Methods of the review

Selection of programs

A total of 543 documents were retrieved from the initial search of databases. Titles and abstracts were reviewed by a member of the Planning Committee (SM) to determine content relevance. Twenty-one documents were identified for further review of which five documents could not be located. An additional 55 papers were identified through internet searches and discussions with experts. A total of 71 documents were reviewed in full of which 18 met the selection criteria for inclusion. Information for one program (Haiti) was collected through correspondence with project management due to the lack of written material on the program.

Figure 1. Search for Literature



Assessment of methodological quality

Aspects of methodological quality of the evidence which formed the basis of this review were assessed by two independent⁷ reviewers (OM and NP). Reviewers were asked to categorize evidence according to established criteria. Disagreements in classification were discussed by the reviewers (OM and NP). If necessary, a third reviewer, a member of the Planning Committee (SM), was consulted. A primary consideration in the quality review was the inclusion of data and methods which allowed for the assessment of CHW performance compared to the “current”⁸ standard of care. A full description of the criteria used to categorize findings and results of the assessment are included in Appendix 3. No studies or reports were eliminated based on conclusions of the quality assessment. Reviewer comments of quality are intended to be used in the synthesis and interpretation of the review findings.

⁷ Independent reviewers were defined as meeting participants outside the Planning Committee and with no discernable bias regarding the meeting outcome.

⁸ The current standard of care was defined as care sanctioned under clinical guidelines approved at the time of program implementation.

Data extraction

Data extraction was conducted by one member (SM) of the Planning Committee. Full articles were made available to the independent reviewers for quality assessment and to participants of the Technical Consultation. Participants were requested to bring to the attention of the Planning Committee any discrepancies in documentation of findings. In addition, researchers and authors familiar with programs identified in the literature review were invited as participants of the Technical Consultation to ensure accuracy of data extraction. The following information was extracted from text or collected during personal communication with program managers/researchers.

- Health care setting including geographic setting (urban, periurban, or rural), and country.
- Participants (providers and clients). For providers this included title, program description (integrated or vertical family planning services, NGO or government, provider remuneration) and selection criteria. For clients this involved selection criteria only.
- Study design (where appropriate) and key features (allocation of groups where appropriate, comparison/control, methods).
- Intervention (injectable formulation, training content and length, provider aids/tools, supervision, injection site (home, clinic, other)
- Number of providers approached, trained and followed-up and the number of consumers enrolled and followed-up.
- Outcomes assessed and timing of data collection.
- Results organized by client screening, injection safety, counseling on side effects, client satisfaction, provider satisfaction, uptake of services, continuation

Data synthesis

A primary objective of the Technical Consultation was to assess the evidence summarized in this document. As part of the Consultation process technical experts were asked to draw conclusions (a) for which evidence is consistent and strong; (b) for which evidence is mixed; and (c) for which evidence is marginal or entirely lacking and, thus requires additional research.

Description of Programs

Setting

Evidence was collected from a total of 20 studies or projects which met the selection criteria. The majority of these programs involved provision of injectables by CHW (16), two involved pharmacists, and two focused on self-injection. Due to the limited evidence from pharmacy and self-injection programs, the Planning Committee decided to limit the focus of the evidence review and summary to provision of injectable contraceptives through CHW.

CHW programs included in this review were implemented in nine countries (Afghanistan, Bangladesh, Bolivia, Ethiopia, Guatemala, Haiti, Madagascar, Peru, and Uganda) representing a wide range of social and development context. Six distinct projects with multiple studies spanning three decades were implemented in Bangladesh. Information was collected from two studies implemented in Guatemala and two studies in Uganda. Evidence from the remaining six countries originates from a single project or study.

Most studies were based in a rural setting (Afghanistan, Bangladesh, Ethiopia, Guatemala, Haiti, Madagascar, Peru, and Uganda). The study in Bolivia was implemented in a periurban setting and the Bangladesh Pathfinder project was implemented in an urban and a rural area.

Intervention characteristics

All programs utilized an existing cadre of workers. The majority of programs (13) were implemented by non governmental organizations. In Peru, both government and NGO workers were used. The Ministry of Health in Bangladesh implemented two programs – one replication program in Abhoynagar and Sirajgoni and one expansion project (in eight rural thanas). The projects employed a range of remuneration schemes for community-based workers including volunteer workers, compensation based on contraceptive sales, and salaried employees.

Incorporating provision of injectables into an existing system involved in-service training for CHW and their supporting supervisors. The length of training varied from three days in Peru to ten days in Ethiopia and Guatemala (APROFAM) including a practicum to master safe injection technique. Another program in Guatemala (Sololá) included a one and a half day refresher training six months after the initial training course. Training content was similar among programs. The program in Madagascar, for example, included basic reproductive physiology, contraceptive technology, counseling, screening, safe injection technique, infection prevention, waste disposal, reporting, acquire and manage commodities, and a practicum (Hatzell Hoke and Wheeler, 2008). Several programs included training and support for job aids used to determine client eligibility and detect contraindications (Bangladesh (replication); Ethiopia; Guatemala (Sololá); Haiti; Madagascar; Peru; Uganda).

All community-based programs provided DMPA. The government supported program in Abhoynagar, Bangladesh also provided NET-EN at the beginning of the program. After a few months of implementation, a decision was taken to drop NET-EN in the community-based program focusing community-based provision on DMPA only (Rahman et al., 1992).

Participants

In some programs all available community-based workers were eligible to be trained in the provision of injectable contraceptives (Bangladesh (Matlab), Bangladesh (Abhoynagar and Sirajgoni), Guatemala (Sololá), and Peru). Other programs selected workers from a pool of available CHW based on productivity, literacy, sex, worker density, ethnicity, experience, intelligence, “dynamism”, and clinical experience (Bolivia, Guatemala (APROFAM), Madagascar, Uganda). At least three programs (Guatemala (APROFAM), Madagascar, Uganda) included male and female providers, though the proportion of male to female workers was quite small in all programs (26%, 15% and 20, respectively).

Reported retention rates were generally higher in programs which selected CHW based on past performance and personal characteristics (Bolivia, Guatemala (APROFAM), Madagascar). A retention rate of less than 50% was reported in one study in Guatemala. Investigators noted a significantly higher drop out rate of unpaid providers compared to those which received compensation (Ramirez, 2008).

Beneficiaries of community-based provision were defined by their geographic location and proximity to the program implementation area. Of those programs which sought to compare community-based to clinic-based services, clients self-selected their preferred type of provider (Bolivia, Ethiopia, Guatemala (APROFAM), Uganda).

Client Screening

Progestogen-only injectable contraceptives are considered extremely safe for use among the vast majority of women (WHO, 2007). According to WHO guidance, there are few conditions for which progestogen-only injectable contraception is not recommended (WHO, 2007).⁹

Program managers and policy makers are often concerned about the ability of providers to appropriately screen clients for medical eligibility to use progestogen-only injectable contraception and provide injections according to service delivery guidelines. Out of the 16 community-based interventions reviewed, ten allowed CHW to conduct client screening and initiate use of progestogen-only injectable contraception. In four Bangladesh (expansion/8 rural thanas, TAF, LIP, and Pathfinder) projects, Bolivia, and Haiti community-based providers were only allowed to provide follow-up doses for injectable clients. In these studies, initial screening and the first dose of DMPA was provided by a clinician or supervisor. Therefore, these studies did not address the CHW ability to screen clients. In Guatemala, one study (APROFAM) changed protocol during the investigation period to allow community-based providers to initiate progestogen-only injectable use.

Methods

The studies reviewed assessed provider competency for screening potential patients in two ways – assessment of provider knowledge of medical eligibility and provider proficiency in provision of progestogen-only injectables.

In Peru and Madagascar, studies utilized standardized interviews or tests to assess community workers knowledge of eligibility criteria (Leon, 2000; Hatzell Hoke and Wheeler, 2008). The Madagascar study created a pre-established measure of proficiency (Hatzell Hoke and Wheeler, 2008). In Peru, researchers randomly assigned community providers to assess the training programs effect (Leon, 2000). In Guatemala, researchers conducted field visits to assess community worker knowledge (Fernandez, Montufar, Ottelangi, et al., 1997). None of these studies compared knowledge of community workers to standard practice or other cadre of health professionals.

Studies incorporated a number of strategies to assess provider competencies in the screening of clients. Strategies included use of simulated or mystery clients in Peru (Leon, 2000); expert consensus in Bangladesh (Khuda, Kane, and Phillips, 1997); and direct observation in Madagascar (Hatzell Hoke and Wheeler, 2008).

⁹ Conditions for which progestin-only injectables are not recommended < 6 weeks postpartum (In settings where pregnancy morbidity and mortality risks are high and this method is one of few widely available contraceptives, it may be made accessible to breastfeeding women immediately postpartum.), multiple risk factors for arterial cardiovascular disease (older age, smoking, diabetes, and hypertension), hypertension (Systolic \geq 160 or diastolic \geq 100), vascular disease, acute deep venous thrombosis (DVT)/pulmonary embolism (PE), ischemic heart disease (current or history of), headaches with aura at any age, unexplained vaginal bleeding (suspicious for serious condition) before evaluation, current or past breast disease (no evidence of disease for at least 5 yrs), viral hepatitis (severe, decompensated), and liver tumors (hepatocellular adenoma, malignant hepatoma).

Results Summary

All studies documented satisfactory levels of provider knowledge after training (Fernandez, Montufar, Ottelangi, et al., 1997; Leon, 2000; Hatzell Hoke and Wheeler, 2008). In Peru, researchers found increased and higher levels of knowledge among trained community-based providers compared to untrained providers (Leon, 2000). Direct observation of provider performance through supervisor assessments and simulate clients¹⁰ also indicate satisfactory levels of competency among providers (Leon, 2000; Hatzell Hoke and Wheeler, 2008).

Discussion

Progestogen-only injectable are safe hormonal contraceptives; only a few medical conditions restrict eligibility for their use. Medical eligibility for use of combined oral contraceptives (COCs) is more restricted than for progestogen-only contraceptives, yet COCs are available for purchase over-the-counter in many countries and service delivery guidelines in many countries allow CHW to initiate COC use. There is extensive experience of community-based programs in screening clients for use of combined oral contraceptives (COCs). Studies have shown that contraindications to use of OCs occur infrequently and effective screening does not require a physician (Huber and Huber, 1975). In some cases, women have been shown to be capable of self-screening for contraindications to COC (Grossman, Fernandez, Hopkins, et al., 2007).

In addition to training, many projects used a screening checklist to aid providers in the task of screening clients (Bangladesh replication (Abhoynagar and Sirajgoni); Ethiopia; Guatemala (Sololá); Haiti; Madagascar; Peru; Uganda). Research has shown that job aids such as the *Pregnancy Checklist* and the *DMPA Eligibility Checklist* can be used effectively by CHW. The *Pregnancy Checklist* and the *Eligibility Checklist*, developed by FHI and endorsed by WHO, guides providers and clients through an algorithm to establish pregnancy status with reasonable reliability and identify contraindications. A study in Nepal found that an eligibility checklist applied by nonphysicians would identify WHO established medical eligibility for DMPA use (Rai, Thapa, Day, et al., 1999).

¹⁰ This study found high levels of screening proficiency only after introduction of a screening checklist. See discussion for additional details (Leon, 2000).

Table 1. Summary of evidence and assessment of quality – provider knowledge of medical eligibility and proficiency in screening clients

Reference	Country	Publication type	Design	Data source	Finding
Khuda, Kane, and Phillips, 1997	Bangladesh expansion (8 thana) ¹¹	Project report	Project monitoring	Expert consensus	CHW “were found to be capable of providing injectables, safely and effectively including screening and counseling” p 121
Fernandez, Montufar, Ottelangi, et al., 1997	Guatemala (APROFAM)	Project report	Quasi-experimental design	Field visits	“all [CHW]... demonstrated an accurate knowledge” of DMPA
Hatzell Hoke and Wheeler, 2008	Madagascar	Project report	Pilot study	Standardized test (n=62)	100% scored 14 pts or above <i>Fundamental Quality Score</i> ¹²
				Supervisor assessment (n=25)	96% of workers supervised mastered the screening checklist
Leon, 2000	Peru	Project report	Quasi-experimental design with matched controls	Standardized test ¹³ (n=180) ¹⁴	CHW scored <i>significantly higher</i> than equivalent untrained health workers
				Simulated client (post retraining n=102)	After retraining and introduction of job aid ¹⁵ , approx. 70% attainment of quality standards ¹⁶

¹¹ Note that the following findings are based on a program (expansion/8 thanas) which did not allow CHW to initiate injectable use. It is possible, however, that this statement is based on the entire body of evidence from Bangladesh as some of the earlier programs (Matlab, Abhoyagnar and Sirajgoni) did involve initial provision of injectables by CHW.

¹² The study developed a *Comprehensive Quality Score* interviews with CHW. According to researchers, the score reflects “a set of indicators of safe, high quality provision of DMPA, including correct use of the screening checklist, safe injection technique, accurate and complete counseling, and proper syringe disposal.” The maximum possible *Comprehensive Quality Score* was 27. A *Fundamental Quality Score* was also developed based on a selection of questions representing essential issues of DMPA provision. The maximum possible *Fundamental Quality Score* was 18.

¹³ Pre and post measures based on the *Family Planning Knowledge Test*.

¹⁴ Project utilized government (Health Workers) and non-government workers (Community promoters). The project report fails to consistently distinguish these two groups.

¹⁵ *ABC of Family Planning for Nonprofessional Providers* is an algorithmic instrument developed to guide counseling and offers technical information for the provider. The tool was developed as part of the project to improve the quality of provider counseling.

¹⁶ Retraining was implemented due to low quality assessed in first round of simulated clients. After retraining, a second round of simulated clients concluded that trained HWs and promoters were able to deliver rural family planning, including DMPA, with nearly 70-percent attainment of the quality standards. The effect size of the intervention after retraining was .89.

Injection Safety

Methods

The ability of community-based workers to master safe injection technique was assessed in two ways – incidence of injection site morbidity and competency in safe injection procedures. Reports of injection morbidity are based on clinic records and client reports. Three studies compared injection morbidity experienced among clients served in clinics to those served by community-based providers (Ethiopia, Guatemala (APROFAM), and Uganda).

To assess adherence to safe injection procedures studies used supervisor assessments (Madagascar), direct observation (Bangladesh expansion (8 thanas)), expert consensus (Bangladesh), and client reports (Guatemala (Sololá)).

Results Summary

Studies which evaluated injection safety by community-based providers demonstrate a high level of performance among these workers. Women reported feeling safe and secure after injection in Guatemala (Ramirez, 2008) and evaluators in Bangladesh and Madagascar observed satisfactory levels of safe technique (Khuda, Kane, and Phillips, 1997; Amed, 1994; Hatzell Hoke and Wheeler, 2008).

Injection morbidity as reported by clients is generally low. Reports of infection or abscesses were less than 1% in Bangladesh, Guatemala, Haiti, and Uganda (Sadiq, 1994; Azim, 1994, Fernandez, Montufar, Ottolenghi, et al., 1997; Jean-Louis, 2009; Stanback, Mbonye, Bekiita,, 2007) and equivalent to current quality standards in Ethiopia, Guatemala, and Uganda (Prata, Guessesw, Cartwright, et al., 2009; Fernandez, Montufar, Ottolenghi, et al., 1997; Stanback, Mbonye, Bekiita,, 2007).

Discussion

The findings presented here are consistent with the conclusions of other technical guidelines which recommend that community-health workers can safely provide intramuscular and subcutaneous injections (WHO, 2008; WHO, 2007).

Concern has been raised that expanding use of syringes could lead to misuse and ultimately contribute to the spread of infectious pathogens, such as HIV and hepatitis. More recent projects use auto-disabled, pre-filled syringes. Use of this technology reduces the probability of provider error and the potential spread of pathogens from reuse of equipment. All projects should adhere to safe injection procedures to minimize risks to clients and providers.

Table 2a. Summary of evidence and assessment of quality – injection morbidity

Reference	Country	Publication type	Design	Data source	Finding
Sadiq, 1994	Bangladesh (TAF)	Presentation	Project monitoring	Project monitoring	No abscesses or inflammation reported
Azim, 1994	Bangladesh (LIP)	Presentation	Project monitoring	Records (n=10,118)	0.4% (41) reported pus at injection site
Prata, Guessesw, Cartwright, et al., 2009	Ethiopia	Preliminary report	Non-randomized community trial	Client interview (n=713)	Induration 0.4% (1/282) paramedic 2.7% (11/405) CHW Ulceration 0.4% (1/282) paramedic 0.2% (1/405) CHW Non statistically significant difference in rates ¹⁷
Fernandez, Montufar, Ottolenghi, et al., 1997	Guatemala (APROFAM)	Project report	Quasi-experimental design comparing clinic services to CB care	Clinic records	0.4% (3) of CHW and 0.5% (2) of clinic clients reported infections at injection site
Jean-Louis, 2009	Haiti	Personal communication	Project monitoring	Clinic records (n=11,261) ¹⁸	No reported morbidities from May 2008 – Feb 2009
Hatzell Hoke and Wheeler, 2008	Madagascar	Project report	Pilot study	Client survey (n=303)	Report no problem with injection site 97%
Stanback, Mbonye, Bekiita, 2007	Uganda	Peer review journal	Non-randomized community trial	Client survey (n=748) ¹⁹	0 abscesses reported ²⁰ Equivalence between CHW and clinic care

¹⁷ Comparison is among Community-based distributors and Health Extension Workers.

¹⁸ Records include clients of clinic and community-based services.

¹⁹ Number of clients who answered this question is slightly less than the total number followed-up. Detailed results are reported in the Project Report (Stanback et al., 2005)

²⁰ Clients of CHW had slightly more reported problems compared to clinic clients (n=24 v n=8). The statistical test found no difference among provider groups. Detailed results are reported in the Project Report (Stanback et al., 2005).

Table 2b. Summary of evidence and assessment of quality – safe injection procedure

Reference	Country	Publication type	Design	Data source	Finding
Mirza, Khuda, Ashraf, et al.,1994	Bangladesh expansion (8 thana)	Presentation	Project monitoring	Direct observation (n=1089)	CHW and paramedics maintained "no touch" technique to prevent infection 90%, almost all disinfected area
Khuda, Kane, and Phillips, 1997	Bangladesh expansion (8 thana)	Project report	Project monitoring	Expert consensus	CHW " <i>were found to be capable of providing injectables, safely and effectively including screening and counseling</i> " p 121
Ramirez, 2008	Guatemala (Sololá)	Project report	Longitudinal Cohort	Client interview (n=193) 1 st follow-up (n=189) 2 nd follow-up	For both first and second follow-ups, over 98% of women reported that they felt safe and secure after the shot was administered.
				Provider interview (n=97) 1 st follow-up (n=50) 2 nd follow-up	For both 1 st and 2 nd follow-ups, 100% of CHW had correct knowledge ²¹ of injection provision
Hatzell Hoke and Wheeler, 2008	Madagascar	Project report	Pilot study	Supervisor assessment (n=25)	93% of workers mastered safe injection technique

²¹ Correct knowledge defined as knew how and where to administer the injection as well as the correct length of time between shots.

Client Counseling on Side Effects

As with other short-term, temporary methods, users of injectable contraceptives report high levels of discontinuation. When asked why they stopped using injectables, women commonly report discomfort with side effects. Therefore, programs are particularly interested in providers' ability and behaviors related to counseling on side effects. Evidence indicates that counseling on side effects prior to initiating use could improve continuation rates.

Methods

Studies in Bolivia, Madagascar, and Uganda assessed provision of counseling based on client's recall of information provided (McCarragher, 2000; Hatzell Hoke and Wheeler, 2008; Stanback, Mbonye, and Bekiita, 2007). Supervisor reports and direct observation were used in Bangladesh and Madagascar to assess counseling behavior (Mirza, Khuda, Ashraf, et al. 1994; Fernandez et al., 1997; Hatzell Hoke and Wheeler, 2008). Studies in Bangladesh and Uganda involved comparative analysis of provider behavior (Mirza, 1994; Stanback, Mbonye, and Bekiita, 2007).

Results Summary

The percentage of clients receiving counseling on side-effects ranged from a low of 70% in Madagascar based on client reports to over 80% in Uganda and Bangladesh based on direct observation. Investigations in Bangladesh and Uganda found no difference in counseling on side effects provided by community-based workers compared to clinical providers (Mirza, 1994; Stanback, Mbonye, and Bekiita, 2007). Findings from these studies suggests that counseling on side effects in clinic-based and community-based programs needs strengthening.

Table 3. Summary of evidence and assessment of quality – counseling on side effects

Reference	Country	Publication type	Design	Data source	Finding
Mirza, Khuda, Ashraf, et al.1994	Bangladesh expansion (8 thana)	Presentation	Project monitoring	Direct observation (n=1089)	50% of clients were given "full information" including side effects and danger signs. No differences found in the quality of services provided by CHW and paramedics ²²
Mirza, 1996 (as referenced in Khuda, Kane, and Phillips., 1997)	Bangladesh expansion (8 thana)	Project report	Project monitoring	secondary	four fifths of clients were counseled on side effects
McCarragher, 2000	Bolivia	Project report	Longitudinal, qualitative study	Client interviews; 1 st inj (n=29) 2 nd inj (n=25) 3 rd inj (n=23)	The majority of users received counseling on side effects at 1 st injection; few clients received similar counseling at subsequent injections ²³
Hatzell Hoke and Wheeler, 2008	Madagascar	Project report	Pilot study	Client survey (n=303)	counseled on side effects 70%
				Supervisor assessment (n=25)	99% of workers provide "complete and accurate" counseling
Stanback, Mbonye, and Bekiita, 2007	Uganda	Peer review journal	Non-randomized community trial	Client survey (n=777)	85% CHW clients and 86% clinic clients were counseled (p-value .49)

²² Comparative analysis conducted among clients of female village workers and female welfare assistants

²³ Analysis does not distinguish among clients of CHW and clinical providers.

Client Perspective

Methods

Studies in Bangladesh, Bolivia, Ethiopia, Guatemala, Madagascar, and Uganda documented the client's perspective with regard to alternative provision of care. All studies captured client satisfaction through client interviews and one project (Guatemala - Sololá) also recorded provider reports of client satisfaction (Ramirez, 2008). Three studies (Bangladesh, Ethiopia, and Uganda) compared client acceptability among women served in clinics and those served by community-based providers (Rahman, Islam, Maru, et al., 1992; Prata, Guessesw, Cartwright, et al., 2009; Stanback, Mbonye, and Bekiita, 2007).

Results Summary

All studies documented high levels of client acceptability from the client and provider perspectives (Rahman, Islam, Maru, et al., 1992; Prata, Guessesw, Cartwright, et al., 2009; Fernandez, Montufar, Ottolenghi et al., 1997; Ramirez, 2008; Hatzell Hoke and Wheeler, 2008; Stanback, Mbonye, and Bekiita, 2007). Studies in Ethiopia and Uganda found no difference in client reported satisfaction among community-based clients compared to clinic-based provision (Prata, Guessesw, Cartwright, et al., 2009; Stanback, Mbonye, and Bekiita, 2007). One study in Bangladesh, however, reported better client satisfaction, accessibility to services, confidence in method and better counseling and side effect management in the community-based intervention area compared to clinic-based services (Rahman, Islam, Maru, et al., 1992).

Table 4. Summary of evidence and assessment of quality – Client satisfaction

Reference	Country	Publication type	Design	Data source	Finding
Huque et al., 1986 (as referenced in Rahman, Islam, Maru, et al., 1992)	Bangladesh replication (Abhoynagar and Sirajgoni)	Project report	Replication	Client interview	better client satisfaction, accessibility to services, confidence in method and better counseling and side effect management in intervention area compared to clinic-based services
McCarraher, 2000	Bolivia	Project report	Longitudinal, qualitative study	Client interview	After their 3 rd shot, 23 (100%) clients would recommend DMPA to a friend
				CHW FGD	Providers felt that clients were satisfied with services provided by CHW
Prata, Guessesw, Cartwright, et al., 2009	Ethiopia	Preliminary report	Non-randomized community trial	Client interview (n=713)	No difference detected in client reporting being very/satisfied with provider among clients of CHW (95%) and clinicians (95%)
Fernandez, Montufar, Ottolenghi et al., 1997	Guatemala (APROFAM)	Project report	Quasi-experimental design	DMPA current user interview (n=47)	All women interviewed who were receiving injections from a CHW or an educator said they planned to continue using DMPA ²⁴
Ramirez, 2008	Guatemala (Sololá)	Project report	Longitudinal Cohort	Provider survey	At first follow-up, CHW (n=97) reported that about 80% of their clients were satisfied with the injectable. At second follow-up, increased to 96%.
				Client survey	At first follow-up, 98% of Depo Provera clients reported being satisfied with the Depo Provera services provided by their CP. At second follow-up it was 95%.
Hatzell Hoke and Wheeler, 2008	Madagascar	Project report	Pilot study	Client survey (n=303)	100% of clients were satisfied with the way they received the injection
Stanback, Mbonye, and Bekiita, 2007	Uganda	Peer review journal	Non-randomized community trial	Client survey (n=777)	95% CHW clients and 93% clinic clients were satisfied with care (p-value .27)

²⁴ 77% of those interviewed chose to have injections from CHW, 13% and from clinic staff, 10% from educators. Selection criteria for interviews are unclear.

Provider Perspective

Methods

Four studies in Bangladesh, Bolivia, Guatemala, and Madagascar reported on the provider perspective (Rahman, Islam, Maru, et al., 1992; McCarraher, 2000; Ramirez, 2008; Hatzell Hoke and Wheeler, 2008). Researchers in Bolivia conducted focus group discussions with providers (McCarraher, 2000), studies in Guatemala and Madagascar involved interviews with providers (Ramirez, 2008; Hatzell Hoke and Wheeler, 2008). The fourth study did not describe data collection methodology (Rahman, Islam, Maru, et al., 1992). Researchers in Guatemala also examined provider attitudes over time (Ramirez, 2008).

Results Summary

Program documentation shows a consistent and high level of satisfaction among community providers (Rahman, Islam, Maru, et al., 1992; McCarraher, 2000; Ramirez, 2008; Hatzell Hoke and Wheeler, 2008;). In Guatemala, researchers demonstrated increased provider confidence over time (Ramirez, 2008). One additional study reported provider's frustration with recordings and record keeping (Fernandez, Montufar, Ottolenghi, et al., 1997)

Table 5. Summary of evidence and assessment of quality – Provider motivation

Reference	Country	Publication type	Design	Data source	Finding
Rahman, Islam, Maru, et al., 1992	Bangladesh (replication) (Abhoynagar and Sirajgoni)	Project report	replication	-	providers expressed pride and satisfaction at being able to deliver injectables
McCarraher, 2000	Bolivia	Project report	Longitudinal, qualitative study	CHW FGD	CHW expressed overall satisfaction with support and supervision, most providers felt comfortable with provision of injectable ²⁵
Ramirez, 2008	Guatemala (Sololá)	Project report	Longitudinal Cohort	Provider interview (n=116) baseline (n=97) 1 st follow-up (n=50) 2 nd follow-up	At baseline, 28% of CHW said they would be uncomfortable providing DMPA 1% and none reported similar discomfort at 1 st and 2 nd follow-up, respectively.
Hatzell Hoke and Wheeler, 2008	Madagascar	Project report	Pilot study	CHW interview (n=61)	100% reported they would like to continue providing injectables

²⁵ One of the five CHW involved in the focus group discussion expressed discomfort with provision of injectables.

Uptake of Services

Project managers and policy-makers are interested in service utilization to assess the ability of CBP to expand services to clientele not currently served by clinic-based services. The data presented here provides evidence of the potential of community-based provision of injectables to a.) increase injectable use, b.) increase contraceptive use overall and c.) reduce inequities in access by reaching the underserved. Additionally, data on utilization rates provides evidence on the acceptability of new services.

Studies reviewed here used a variety of approaches to measure short-term project impact. Of primary interest to this review was evidence which demonstrated – a.) utilization of community-based provision of injectable services, b.) utilization of services among “new” users, and c.) utilization of services among underserved population groups.

Methods

Studies in Afghanistan and Bangladesh assessed the relative impact of project implementation on contraceptive use and injectable use, in particular, by monitoring change in contraceptive prevalence in communities exposed to the intervention (MSH, [no date]; Azim, 1994, Bhatia, Mosley, Faruque, et al., 1980; Rahman, Islam, Maru, et al., 1992). In Bangladesh, Phillips, Hossain, Huque, and colleagues (1989) estimated the relative increase of contraceptive use attributable to community-based provision of injectables through regression analysis. Studies in Bangladesh, Bolivia, Ethiopia, Guatemala, and Uganda documented utilization of clinic-based and community-based services (McCarragher, 2000; Prata, Guessesw, Cartwright, et al., 2009; Fernandez, Montufar, Ottolenghi, et al., 1997; Stanback, Mbonye, Bekiita., 2005). In Madagascar and Uganda (MIVH) studies recorded client load over the life of the project (Hatzell Hoke and Wheeler, 2008; Erlich, 2009).

A key argument for the importance of community-based workers is their ability to reach new adopters and underserved populations. Studies in Bangladesh, Bolivia, Ethiopia, Guatemala, Madagascar, Peru, and Uganda documented the proportion of new family planning clients served by CHW (Mirza, Khuda, Ashraf, et al., 1994; McCarragher, 2000; Fernandez, Montufar, Ottolenghi, et al., 1997; Ramirez, 2008; Hatzell Hoke and Wheeler, 2008; Leon, 2000; Stanback, Mbonye, Bekiita., 2005). “New users” are defined by some studies as first-time family planning users and in other cases as women who were not using contraception prior to initiation in the project.

Three studies documented the profile of clients of CHW and clinic-based services. Differentials in client profile allow program managers to examine the potential of services to reach underserved populations. Characteristics of interest include indigenous women in Guatemala (Fernandez, Montufar, Ottolenghi, et al., 1997), women with limited education in Ethiopia and Uganda (Stanback, Mbonye, Bekiita., 2005), and familial support of contraceptive use in Uganda (Stanback, Mbonye, Bekiita., 2005).

Results summary

Use of community-based injectable services was significant in all studies reviewed. This evidence suggests that community-based delivery of injectable services by CHW is acceptable in a wide variety of settings. Studies in Bolivia, Ethiopia, Guatemala and Uganda report utilization rates of clinic-based and community-based injectable services (McCarragher, 2000; Prata, Guessesw, Cartwright, et al., 2009; Fernandez, Montufar, Ottolenghi, et al., 1997; Stanback, Mbonye, Bekiita, 2005). These studies were designed to compare the quality of services in these two settings with recruitment specifications for community-based and clinic-based clients. Therefore, utilization rates from these studies may serve as an indication of acceptability of community-based services, but are not appropriate measures of the potential value-added of community-based services. One study from Bangladesh suggests that many women prefer community-based injectable services over clinic-based care. One study found that 8.5% of MWRA were users of community-based services while only 1% of women received injectables from clinic-based providers (Rahman, Islam, Maru, et al., 1992). Khuda, Kane, and Phillips (1997) report that the relative share of injectables provided by fieldworkers increased from 5% to 36%.

Evidence from Bangladesh and Afghanistan demonstrate the potential value-added of DMPA provision at the community level. Studies from these countries show an increase in injectable use ranging from 11 percentage points to 26 percentage points in approximately 18 months time (MSH, [no date]; Bhatia, Mosley, Faruque, et al., 1980). Additional studies from Bangladesh also document significant increases in injectable use, but results are less impressive (Rahman, Islam, Maru, et al., 1992; Mirza, Khuda, Ashraf, et al., 1994; Sadiq, 1994; Azim, 1994; Sadiq, 1994). Phillips and colleagues (1989) estimated that introduction of home-based DMPA delivery in government areas under optimal treatment conditions would result in an increase of 8 percent in CPR in the first year. It should be noted the Matlab intervention in Bangladesh demonstrated greater impact than subsequent projects in that country. Community-based projects following the Matlab project involved less intensive interventions and are generally considered of lower quality (Phillips, Hossain, Huque, et al., 1989).

Among studies which reported data by type of provider, between 41% and 45% of CHW clients were not using contraceptives prior to project implementation (Mirza, Khuda, Ashraf, et al., 1994; Azim, 1994; Hatzell Hoke and Wheeler, 2008). Studies in Madagascar and Ethiopia documented 38% and 28% of CHW clients had never used modern contraception prior to injectable use (Hatzell Hoke and Wheeler, 2008; Prata, Guessesw, Cartwright, et al., 2009). In Guatemala, CHW served a significantly larger proportion of indigenous women compared to clinic-based services (83% v 17%) (Fernandez, Montufar, Ottolenghi, et al., 1997). Results on the potential of these projects to reach women with limited or no education, however, are mixed (Stanback, Mbonye, Bekiita, 2005; Prata, Guessesw, Cartwright, et al., 2009).

Table 6a. Summary of evidence and assessment of quality – uptake of services

Reference	Country	Publication type	Design	Data source	Finding
MSH, [no date]	Afghanistan	Project report	Baseline/ endline, Stratified random sampling	Household survey Stratified random sampling	Use of injectables among MWRA increased in 3 intervention sites ²⁶ 2 to 15% (Farza) 6 to 27% (Islam Qala) 7 to 18% (Tormay) CPR 9 to 34% (Farza) 20 to 44% (Islam Qala) 24 to 51% (Tormay)
Phillips, Hossain, Huque, et al., 1989	Bangladesh (Matlab)	Book	Longitudinal, intervention research	Community based, demographic surveillance	Over 40% of CPR in project area is attributed to use of DMPA ²⁷
	Bangladesh (Extension)		replication	Regression analysis	Introduction of home based DMPA delivery in gov't areas under optimal treatment conditions would result in 8% increase in CPR in the first year ²⁸
Bhatia , Mosley, Faruque, et al., 1980	Bangladesh (Matlab)	Peer review journal	Longitudinal, intervention research	Community based, demographic surveillance	Use of injectables increased in intervention areas over 18 month period. 0.5 to 26.8% (CDP control) 2 to 26.8% (CDP distribution area) ²⁹ CPR 4.9 to 53% (CDP control) 8.9 to 49.8% (CDP distribution area)

²⁶ Baseline conducted October 2005. Endline taken in June 2006.

²⁷ Researchers note that “even minor lapse in supply of DMPA vials produced discernable declines in overall contraceptive practice.”

²⁸ Researchers estimate impact would be half as great (approx 4%) in the absence of program supports.

²⁹ Contraceptive Distribution Program (CDP) was the predecessor to the Family Planning-Health Services Project (FPHSP). The FPHSP was implemented in areas where CDP had worked and in a control site where no previous intervention had taken place.

Rahman, Islam, Maru, et al., 1992	Bangladesh replication (Abhoynagar and Sirajgani)	Project report	Longitudinal, replication	Sample Registration System 1983 pre-intervention 1991 post-intervention National ave based on CPS	Use of injectables 0.1% to 19% (Abhoynagar) 0.1% to 12% (Sirajgani) National average for injectable use in 1990 was 2.4% CPR 21% to 47% (Abhoynagar) 11%, to 41% (Sirajgani) National average for injectable use in 1990 was 2.4%
			Quasi-exp design (In Siraj half the upazila (5 unions) continued with clinic-only services, in (5 unions) doorstep inj services were introduced) ³⁰	Sample Registration System (Dec 1988 – Dec 1990)	8.5% of MWRA were inj clients of door-step delivery, 1% were inj clients of clinic-based services, once door-step services were introduced in control area # of inj users rose from 400 (July 1989) to 1400 (3 mon) to 2800 (Dec 1990). (Sirajgani)
Mirza, Khuda, Ashraf, et al., 1994	Bangladesh expansion (8 thanas)	Presentation	Project Monitoring	MIS (March 1993 to July 1994)	2-fold increase in inj use in all thanas
Sadiq, 1994	Bangladesh (TAF)	Presentation	Monitoring	MIS (preliminary data)	inject use in intervention sites increased from 12% to 16%
Azim, 1994	Bangladesh (LIP)	Presentation	Monitoring	MIS (Aug 1993 to Aug 1994)	inj use rose from 11% to 15% of the method mix. Contraceptive Acceptance Rate inc from 59% to 65%,
Shahnaz and Hossain, 1994	Bangladesh (Pathfinder)	Presentation	Monitoring	MIS (9 mon)	number of inj users increased by 39% in rural areas (4890 to 6791) and doubled in urban areas (1771 to 3627) ³¹
Khuda, Kane, and Phillips, 1997	Bangladesh	Project report	Impact of program at national level	Unknown (1985 to 1993/4)	Increase in the relative share of injectables provided by fieldworkers inc from 5% to 36% (pg 101)

³⁰ Baseline taken in Dec 1988, in July 1989 doorstep delivery was added to 5 control unions where clinic-only services were previously available.

³¹ It is unclear if reporting is based on clients of doorstep services only or includes clients of clinic care also.

McCarragher, 2000	Bolivia	Project report	Longitudinal, qualitative study	Study records (n=29)	45% (n=13) chose home-based administration of inj over clinic-based services
Prata, Guessesw, Cartwright, et al., 2009	Ethiopia	Preliminary report	Pilot study	Study records (n=976)	Percentage of clients receiving injection by type of provider 59% CHW 41% clinicians
Fernandez, Montufar, Ottolenghi, et al., 1997	Guatemala (APROFAM)	Project report	Quasi-experimental design comparing clinic services to CB care	Clinic records (n=1192) 15 mon	779 (65%) preferred CHW 410 (35%) preferred clinicians Enrollment
Hatzell Hoke and Wheeler, 2008	Madagascar	Project report	Pilot study	CHW registers 6 mon	1662 users
Leon, 2000	Peru	Project report	Quasi-experimental design with matched controls	Service records	Performance of government workers located in the same community as NGO CHW did not differ from the performance of government workers in areas without NGO CHW. Researchers propose that this finding supports the hypothesis that NGO CHW expand access to clients not already served by government workers.
Stanback, Mbonye, Bekiita,, 2007	Uganda	Peer review journal	Non-randomized community trial	Study records 9 mon	562 (59%) CHW clients 383 (41%) clinic clients enrollment
Erlich, 2009	Uganda (MIHV)	Personal communication	Project monitoring	Study records	792 units of DMPA dispensed, wide variation among implementation sites

Table 6b. Summary of evidence and assessment of quality – utilization by new clients

Reference	Country	Publication type	Design	Data source	Finding
Mirza, Khuda, Ashraf, et al., 1994	Bangladesh expansion (8 thanas)	Presentation	Monitoring	MIS data	43% of inj clients were not using contraception prior to intervention introduction
Azim, 1994	Bangladesh (LIP)	Presentation	Monitoring	MIS data (n=8994)	45% of inj clients were not using contraception prior to intervention
McCarragher, 2000	Bolivia	Project report	Longitudinal, qualitative study	Client interview	41% (n=29) ³² were first modern method used
Prata, Guessesw, Cartwright, et al., 2009	Ethiopia	Preliminary report	Non-randomized community trial	Study records (n=976)	approx 35% of paramedical and 38% of CHW had never used contraception, difference is not statistically significant
Fernandez, Montufar, Ottolenghi, et al., 1997	Guatemala (APROFAM)	Project report	Quasi-experimental design	Client interview (n=47)	60% of respondents were not using any FP method before initiating injectable use ³³
				Clinic records (n=1192)	65% (781) first-time FP users ³⁴
Ramirez, 2008	Guatemala (Sololá)	Project report	Longitudinal Cohort	Client interviews (n=193)	75% of clients had not used injectables previously 22% reinitiators of injectables
Hatzell Hoke and Wheeler, 2008	Madagascar	Project report	Pilot study	CHW registers (n= 1662)	41% new users or previous users who were not currently using contraception
				Client interview (n=303)	28% reported never using family planning
Stanback, Mbonye, Bekiita, 2005	Uganda	Peer review journal	Non-randomized community trial	Client interview (n=777)	86% CHW clients 76% clinic clients report first time use of DMPA

³² Report does not disaggregate new users by preferred provider (CHW or clinic).

³³ Report does not disaggregate by type of provider.

³⁴ Report does not disaggregate by type of provider.

Table 6c. Summary of evidence and assessment of quality – utilization by vulnerable groups

Reference	Country	Publication type	Design	Data source	Finding
Prata, Guessesw, Cartwright, et al., 2009	Ethiopia	Preliminary report	Pilot study	Study records (n=976)	clients of paramedical and CHW are similar in terms of age, marital status, and number of children. CHW reported a higher percentage of clients with no education than paramedicals (90% v 78%)
Fernandez, Montufar, Ottolenghi, et al., 1997	Guatemala (APROFAM)	Project report	Quasi-experimental design comparing clinic services to CB care	Clinic records (n=1192)	83% (417) of CHW clients were Mayan, 17% (83) of clinic clients were Mayan
Stanback, Mbonye, Bekiita,, 2005	Uganda	Peer review journal	Non-randomized community trial	Client survey (n=777)	Clients of CHW were more likely to be single (16% v 9%) than clients of clinic-based services Clients of clinic-based services were more likely to have no education (16% v 8%) and have supportive husbands (52% v 41%)

Continuation

Methods

Continuation rates for clients of injectable contraception are available for CHW projects in Bangladesh, Bolivia, Guatemala, Ethiopia, Madagascar, and Uganda (Phillips, Hossain, Huque, et al., 1989; Khuda, Kane, and Phillips, 1997; McCarraher, 2000; Fernandez, Montufar, Ottolenghi, et al., 1997; Hatzell Hoke and Wheeler, 2008; Stanback, Mbonye, Bekiita., 2005; Poss, Stanback, Mbonye, et al., 2009). Rates are calculated at varying lengths of time from 13 weeks in Ethiopia and Madagascar to 18 months in Bangladesh, and up to 3 years in Uganda (Poss, Stanback, Mbonye, et al., 2009). Data from Bangladesh, Guatemala, Ethiopia, and Uganda allow for comparison of rates among clients of clinic and community-based services.

Results summary

Continuation rates in areas served by community-based workers varied substantially. In Bangladesh, continuation rates at six months, 12 months, and 18 months varied by project site. The highest continuation rates were found in Matlab (85.8%, 68.7%, 57.5%) with lower rates found in the replication sites Sirajgani (75.8%, 35.2%, 16.1%) and Abhoynagar (81.9%, 45.7%, 25.6%) which were supported by the government system (Phillips, Hossain, Huque, et al., 1989). It should be noted that the Matlab intervention is generally considered superior in terms of intensity and quality of program inputs compared to the replication sites. Contraceptive continuation rates for the same sites reported by Khuda, Kane, and Phillips (1997) are slightly higher, but reflect the same pattern of decline across intervention sites. Studies in Bangladesh and Uganda documented higher continuation rates for clients of community based workers compared to clinic clients, while data from Guatemala found no difference in continuation rates at one year (Fernandez, Montufar, Ottolenghi, et al., 1997).

Table 7. Summary of evidence and assessment of quality – continuation rate for injectable contraception

Reference	Country	Publication type	Design	Data source	Length of follow-up	Finding	National 12-mon Cont. rate (yr) ³⁵
Phillips, Hossain, Huque, et al., 1989	Bangladesh (Matlab and Replication)	Book	Longitudinal, intervention research	First-method DMPA life table	6 mon, 12 mon, 18 mon	86%, 69%, 58% Matlab 76%, 35%, 16% Sirajgani 82%, 46%, 26% Abhoynagar	51.3% (2004)
Khuda, Kane, and Phillips, 1997	Bangladesh (Matlab and Replication)	Project report	Longitudinal, replication	SRS	6 mon, 12 mon, 18 mon ³⁶	90%, 64%, 49% Matlab ³⁷ 68%, 49%, 33% Sirajgani 73%, 58%, 46% Abhoynagar	
Salway et al 1991 (as refer in Rahman et al., 1992)	Bangladesh replication (Abhoynagar)	Project report	Quasi-experiment	unknown	6 mon ³⁸ (1986-1990)	76.1% intervention (Abhoynagar) 41.7% comparison (clinic-only)	
Rahman, Islam, Maru, et al., 1992	Bangladesh replication (Sirajgoni)	Project report	Quasi-experiment	Monitoring	Monthly “drop-out” rate (1988-1989)	“drop-out” rate ranged from 2.2 to 7.5% (intervention) 3.2 to 20.6% (clinic-only) Authors note that the “drop-out” rate for any given month was always higher for the clinic-based program	
Mirza, Khuda, Ashraf, et al., 1994	Bangladesh expansion (8 thanas)	Presentation	Monitoring	SRS	6 mon 12 mon	79%, 49%	
Sadiq, 1994	Bangladesh (TAF)	Presentation	Quasi-experimental		8 mon (Jan to Aug 1994)	“drop-out” rate for inject clients 2.7 in clinic only areas 2.1 in areas implementing doorstep delivery	
McCarragher, 2000	Bolivia	Project report	Longitudinal, qualitative study	Client interview	6 mon	79% (23 out of 29) of clients continued through 3 doses. Rates were similar for	

³⁵ 12-month continuation rates for injectable users are drawn from the most recent DHS report (Bangladesh and Ethiopia), United Nations Department of Economic and Social Affairs/ Population Division (Bolivia and Guatemala).

³⁶ Cumulative continuation rate from 1983 to 1990.

³⁷ Matlab continuation rate is referenced from Akbar et al., 1991.

³⁸ Author notes that further comparison, beyond 6 months, could not be done due to the low number of continuers in the comparison area.

						CHW and clinic continuation (11 out of 13; CHW) (12 out of 12, clinic) ³⁹	
Prata, Guessesw, Cartwright, et al., 2009	Ethiopia	Preliminary report	Pilot study	Study records (n=976)	13 weeks	94% paramedic 99% CHW Difference is statistically significant	68% (2005)
Fernandez, Montufar, Ottolenghi, et al., 1997	Guatemala (APROFAM)	Project report	Quasi-experimental design	SPSS life table procedure (n=1192)	12 mon	90.6% continuation rate for CHW clients 90.9% continuation rate for clinic clients	45.1% (1999)
Hatzell Hoke and Wheeler, 2008	Madagascar	Project report	Demonstration	CHW registers (n=1662 users)	924 out of 1662 eligible for 2 nd inj	93% received 2 nd injection of which 96% were provided by CHW	Not available
				Client interview (n=303)	199 out of 303 eligible for 2 nd inj	96% received 2 nd injection of which 98% were provided by CHW	
Stanback, Mbonye, Bekiita, 2005	Uganda	Peer review journal	Non-randomized community trial	Client interviews (n=777)	13 wks after 1 st inj	88% CHW clients received 2 nd shot 85% Clinic clients received 2 nd shot OR = 1.2 (CI = .8 - 1.9) for CHW continuing compared to clinic clients	Not available
Poss, Stanback, Mbonye, et al., 2009	Uganda	Unpublished manuscript	Non-randomized community trial Survival analysis (Kaplan-Meier)	Client interview (n=308 clients of CHW) (n=217 clients of clinic) ⁴⁰	3 yr follow-up	Clients of CHW continued with inject for a longer period of time before discontinuing (15 mon v 10 mon, p=0.043), were less likely to report discontinuation due to side effects (15% v 29%, p<0.001), reported experiencing fewer stock-outs than clinic-based clients (5% v 15%, p<0.001), and more likely to report discontinuing to become pregnant again (48% v 27%, p<0.001).	

³⁹ One participant dropped out of the study. Three additional clients discontinued use of injectables after the first injection. It is unclear if they received their first shot from a CHW or clinician.

⁴⁰ Loss to follow-up from enrollment was significant in both CHW and Clinic groups (45% and 50% respectively)

References

(* The 19 documents denoted with the asterisk provided evidence for the formal review, covering the 16 projects summarized in Appendix 4.)

*Amed JU and Mirza T. Introduction and background information on doorstep injectable services. 28 September 1994. In: *Lessons learned on doorstep delivery of injectable contraceptives. Workshop Proceedings*. International Centre for Diarrhoeal Disease Research, Bangladesh.

*Azim T. Doorstep injectable programme in the Local Initiative Programme (LIP) thanas. 28 September 1994. In: *Lessons learned on doorstep delivery of injectable contraceptives. Workshop Proceedings*. International Centre for Diarrhoeal Disease Research, Bangladesh.

*Bhatia S, Mosley WH, Faruque ASG, and Chakraborty J. The Matlab Family Planning Health Services Project. *Studies in Family Planning*. June 1980. 11,6:202-12.

*Ehrlich L. Minnesota International Health Volunteers. Personal communication. March 2009.

*Fernandez VH, Montufar E, Ottolenghi E, et al. Injectable Contraceptive Service Delivery Provided by Volunteer Community Promoters. 1997. New York, NY. Population Council.

Grossman D, Fernandez L, Hopkins K, Amastae J, Garcia S, Potter J. Self-screening for contraindications to oral contraceptive use: Evidence for the safety of over-the-counter provision. *Contraception*. 2007. 76: 158.

*Hatzell-Hoke T and Wheeler S. Safety, Feasibility, and Acceptability of Community-based distribution (CBD) of Depot Medroxy Progesterone Acetate (DMPA) in Madagascar. 2008. Family Health International, Ministere de la Sante, du Planning Familial et de la Protection Sociale and USAID.

Huber DH and Huber SC. Screening oral contraceptive candidates and inconsequential pelvic examinations. 1975 *Studies in Family Planning* 6(2): 49–51.

Jean-Louis B. Project Manager: World Vision. personal communication. April-May 2009.

*Khuda B, Kane TT, Phillips JF, eds. Improving the Bangladesh Health and Family Planning Programme: Lessons Learned through Operations Research. 1997. Bangladesh, International Centre for Diarrhoeal Disease Research.

*Leon F. Utilization of DMPA and other Operations Research Solutions in Peru. 2000. Lima, Peru. Population Council.

*Management Sciences for Health [MSH]. Innovations in Family Planning: The Accelerating Contraceptive Use Project, Afghanistan. Cambridge, MA, Management Sciences for Health. [no date].

*McCarragher D. Informe Final. Administracion de Depo Provera a traves de asistentes voluntaries y personal del Centro de Salud CIES – El Alto. 2000. Family Health International. Unpublished. Project Report.

Mirza T, Ashraf A, Kabir H, and Ahmed J. Training experience in domiciliary injectable contraceptive services in the national family planning programme. *Working Paper No. 120*. 1996. International Centre for Diarrhoeal Disease Research, Bangladesh.

*Mirza T, Khuda B, Ashraf A, Kabir H, Haque I, Alam S, et al. Doorstep delivery of injectable contraceptives in eight thanas: Key findings. 28 September 1994. In: *Lessons learned on doorstep delivery of injectable contraceptives. Workshop Proceedings*. International Centre for Diarrhoeal Disease Research, Bangladesh.

*Phillips JF, Hossain MB, Zahidul Huque AA, et al. A case study of contraceptive introduction: domiciliary Depot-Medroxy Progesterone Acetate services in rural Bangladesh. In Segal SJ, Tsui AO, Rogers SM, eds. *Demographic and Programmatic Consequences of Contraceptive Innovations (Reproductive Biology)*. 1989. New York, NY, Plenum Press.

*Poss C, Stanback J, Mbonye KA, Bekiita M, Otterness C, Mwebesa W. Analysis of long-term outcomes of injectable contraceptive users in Nakasongola, Uganda. 2009. unpublished manuscript.

*Prata N, Guessesw A, Cartwright A, Karasek D. Community-based distribution of DMPA in Tigray, Ethiopia: Preliminary Results. 2009.unpublished report.

*Rahman F, Islam M, Maru M, and Whittaker M. Home delivery of injectable contraceptives: An operations research study in Bangladesh. *Working Paper No. 66* Jan 1992. Presented at: International workshop on improving family planning program effectiveness and quality of care through operations research. Dhaka, Bangladesh 5-14 December 1993.

Rai C, Thapa S, Day J, Bhattarai L, McMullen S, Jha R, et al. Conditions in Rural Nepal for which Depot-Medroxyprogesterone Acetate initiation is not recommended: Implication for community-based service delivery. *Contraception* 1999; 60: 31-7

*Ramirez L. “Introduction of a training program for the delivery of Depo-Provera® by community-based providers from the Ministry of Public Health in Guatemala” (Proposal A25086) *Informe narrativo de resultados*. 2008. Centro de Investigación Epidemiológica en Salud Sexual y Reproductiva, Guatemala City, Guatemala. Unpublished. Project Report.

*Sadiq NS. Doorstep injectable service delivery project of The Asia Foundation. 28 September 1994. In: *Lessons learned on doorstep delivery of injectable contraceptives. Workshop Proceedings*. International Centre for Diarrhoeal Disease Research, Bangladesh.

*Shahnaz S and Hossain M. Home delivery of injectables: Pathfinder experience. 28 September 1994. In: *Lessons learned on doorstep delivery of injectable contraceptives. Workshop Proceedings*. International Centre for Diarrhoeal Disease Research, Bangladesh.

Smith C, Huque AAZ, Koblinsky M, Rahman F, Molla AA, Alam M, et al. Domicillary injectable contraceptive programme in Adhoyanagar and Sirajganj Upazila. *Operations Paper* 54. 1986. Bangladesh, International Centre for Diarrhoeal Disease Research.

*Stanback J, Mbonye A, and Bekiita M. Contraceptive injections by community health workers in Uganda: a nonrandomized community trial. *Bulletin of the World Health Organization* 2007; 85:768-773.

Stanback J, Mbonye A, LeMelle J, et al. Final report on safety and feasibility of community-based distribution of Depo Provera. June 2005. Family Health International and Save the Children/USA.

Stanwood NL, Eastwood K, and Carletta A. Self-injection of monthly combined hormonal contraceptive. *Contraception* Jan 2006; 73(1): 53–55.

United Nations Department of Economic and Social Affairs/ Population Division. *Levels and trends of contraceptive use as assessed in 2002*.

World Health Organization Department of Reproductive Health and Research (WHO/RHR) and Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP). INFO Project. *Family Planning: A Global Handbook for Providers*. Baltimore and Geneva: CCP and WHO, 2007.

World Health Organization Department of Reproductive Health and Research (WHO/RHR). *Guatemala Policy Brief*. WHO. 2009
World Health Organization. *Task Shifting: Global recommendations and guidelines*. 2008. Geneva, World Health Organization.

World Health Organization. *The Community Health Worker: Working guide Guidelines for training Guidelines for adaptation*. Geneva: WHO, 1987.
World Health Organization. *Working together for Health: The World Health Report 2006*. Geneva: WHO, 2006.

Appendix 1. Search Terms

Search terms	Derivatives
Injectable contraception	Injectables, Injectable contraceptive
Depot medroxyprogesterone acetate	DMPA, Depo, Depo- Provera, Megestron, and Petogen
Norethiterone enanthate	NET-EN, Noresterat, and Syngestal
Medroxyprogesterone acetate (MPA)/estradiol cypionate	Ciclofem, Ciclofemina, Cyclofem, Cyclo Provera, Feminera, Lunella, Lunelle, Novafem
Norethiterone enanthate (NET-EN)/estradiol valerate	Mesigyna and Norigynon
Community-based distributor	CBD, community-based distribution
Community health worker	CHW
Community volunteer	
Community promoter	
Village health worker	VHW
Pharmacist	Pharmacy, drug shop
Self-injection	Home-based, home

Appendix 2. Organizations and Individuals Contacted

Name	Organization
Chris Welch	Management Sciences for Health
Adrienne Allison	World Vision
Dr. Lesly Michaud	World Vision
Jane Hutchings	PATH
Heather Bergmann	John Snow, Inc.
Noah Marwil	John Snow, Inc.
Neeraj Kak	University Research Council
Erinna Bowman	Population Council
Sandy Garcia	Population Council
Ricardo Vernon	INSAD
Amanda Abbott	Family Health International
Mia Foreman	Macro International
Laura Ehrlich	Minnesota International Health Volunteers
Winnie Mwebesa	Save the Children
Douglas Huber	consultant
Alice Cartwright	University of California, Berkeley
Gladys Kalema-Zikusoka*	Conservation Through Public Health
Steve Rubanga*	Conservation Through Public Health
Paul (don't know last name)*	Conservation Through Public Health
Jim Foreit	Population Council
Ruth Simmons	ExpandNet (formerly ICDDR,B)
Dr. Tanjina Mirza	Plan Canada (formerly ICDDR,B)
Dilruba Mahbuba	ICDDR,B
Kay Willson	Futures Group

* = contacted but no response

Internet search conducted on organization website:

CARE

Family Health International

PATH

Population Council

Save the Children

USAID

Appendix 3. Quality Assessment Classification

As part of the review of the strength of available evidence on expanding access to injectable contraceptives, two independent reviewers (OM and NP) were asked to assess the quality of evidence identified during the literature review. Two independent reviewers⁴¹ were selected from the participants of the Technical Consultation. Reviewers were identified by the Planning Committee to have the ability to judge the evidence impartially and to be distinguished experts in the technical content area and research methodologies. Assessment of the evidence took place prior to the Technical Consultations and results of this assessment will be made available to participants as part of the meeting deliberations.

As part of the quality assessment, reviewers were asked to identify and record relevant limitations and strengths of the evaluation, and to classify results according to the *Quality of Evidence* rating system developed for the United States Preventive Services Task Force⁴²:

Study Quality Assessment

Each study receives a Level I, Level II – 1, Level II-2, Level II-3, Level III rating based on its study design (Table 1), and is assigned a poor, fair, or good rating based on the internal validity of a study (Table 2). A good study meets all criteria for that study design; a fair study does not meet all criteria but is judged to have no fatal flaw; and a poor study contains a fatal flaw. Evidence is also identified as direct (the evidence was based on data directly addressing the question) or indirect (the evidence was extrapolated from other relevant data).

Table 1. Levels of Evidence

Level I	Evidence obtained from at least one properly designed randomized controlled trial.
Level II-1	Evidence obtained from well-designed controlled trials without randomization.
Level II-2	Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one centre or research group.
Level II-3	Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments could also be regards as this type of evidence.
Level III	Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert communities.

⁴¹ Independent reviewers were identified as individuals not affiliated with the organizing agencies.

⁴² Harris RP, Helfand M, Woolf SH, et al. Current methods of the US Preventive Services Task Force: a review of the process. *Am J Prev Med* 2001; 20(3 Suppl):21-35.

Table 2. Criteria for Grading the Internal Validity of Individual Studies

Systematic Reviews	<p>Comprehensiveness of sources/search strategy used</p> <p>Standard appraisal of included studies</p> <p>Validity of conclusions</p> <p>Recency and relevance</p>
Case-control studies	<p>Accurate ascertainment of cases</p> <p>Nonbiased selection of cases/controls with exclusion criteria applied equally to both</p> <p>Response rate</p> <p>Diagnostic testing procedures applied equally to each group</p> <p>Appropriate attention to potential confounding variables</p>
Randomized controlled trials (RCTs) and cohort studies	<p>Initial assembly of comparable groups:</p> <p>For RCTs: adequate randomization, including concealment and whether potential confounders were distributed equally among groups</p> <p>For cohort studies: consideration of potential confounders with either restriction or measurement for adjustment in the analysis; consideration of inception cohorts</p> <p>Maintenance of comparable groups (includes attrition, crossovers, adherence, contamination)</p> <p>Important differential loss to follow-up or overall high loss to follow-up</p> <p>Measurements: equal, reliable, and valid (includes masking of outcome assessment)</p> <p>Clear definition of interventions</p> <p>All important outcomes considered</p> <p>Analysis: adjustment for potential confounders for cohort studies, or intention-to-treat analysis for RCTs</p>
Diagnostic accuracy studies	<p>Screening test relevant, available for primary care, adequately described</p> <p>Study uses a credible reference standard, performed regardless of test results</p> <p>Reference standard interpreted independently of screening test</p>

Assessment Findings

A total of 19 documents provided evidence for the Technical Consultation and were graded according to the quality assessment ratings described above. Of these documents, thirteen were project reports or workshop proceedings (Azim, 1994; Fernandez et al, 1997; Hatzel-Hoke and Wheeler, 2008; Leon, 2000; MSH, [no date]; MaCarragher, 2000; Mirza et al, 1994; Prata et al, 2009; Poss et al, 2009; Rahman et al, 1992; Ramirez, 2008; Sadiq, 1994; and Shahnaz and Hossain, 1994); two were from peer review publications (Bhatia et al, 1980 and Stanback et al, 2007); two appeared in edited books (Khuda et al, 1997 and Phillips et al, 1989), and two projects provided information through personal communication (Ehrlich, 2009 and Jean-Louis, 2009).

All evidence was based on data directly addressing community distribution of contraceptives. Nearly a third of the studies (6) was classified as Level II (Bhatia et al, 1980; Leon, 2000; Poss et al, 2009; Prata et al, 2009; Rahman et al, 1992; Stanback et al, 2007). Five of these studies were graded as Level II – 1 (Leon, 2000; Poss et al, 2009; Prata et al, 2009; Rahman et al, 1992; Stanback et al, 2007) and one was categorized as Level II – 2 (Bhatia et al, 1980). The reviewers found that in some studies, components of the study design limited the generalizability of the findings. For example, some studies purposively selected community-based workers rather than randomly selecting from all CHW available. This choice of study design, while appropriate for program implementation, limits the generalizability of study findings and resulted in a lower rating of the study’s internal validity. Of the Level II studies, one study was classified as “good” (Bhatia et al, 1980), four were categorized as “fair” (Leon, 2000; Prata et al, 2009; Rahman et al, 1992; Stanback et al, 2007), and one was found to be “poor” (Poss et al, 2009).

The majority of studies were categorized as Level III (12) (Azim, 1994; Ehrlich, 2009; Fernandez et al, 1997; Hatzel-Hoke and Wheeler, 2008; Jean-Louis, 2009; MSH, [no date]; MaCarragher, 2000; Mirza et al, 1994; Phillips et al, 1989; Ramirez, 2008; Sadiq, 1994; Shahnaz and Hossain, 1994). It should be noted that many of these studies were conducted as part of a larger program effort and reported in the context of program implementation rather than as part of an independent research project. For some, documentation of these studies lacked sufficient information regarding the study design and methodology resulting in a lower rating of the study’s internal validity. Of the Level III studies one was rated as “good” (Mirza et al, 1994), five were found to be “fair” (Azim, 1994; Hatzel-Hoke and Wheeler, 2008; MaCarragher, 2000; Phillips et al, 1989; Ramirez, 2008), and six were categorized as “poor” (Ehrlich, 2009; Jean-Louis, 2009; Fernandez et al, 1997; MSH, [no date]; Sadiq, 1994; Shahnaz and Hossain, 1994).

Due to limitations of data retrieval, review of one document was limited to sections which reported research finding with little or no information on data collection methods. Thus, reviewers had insufficient information and could not be categorize according to the established rating system (Khuda et al, 1997).

Appendix 4. Evidence Summary by Program

Afghanistan

Reference	Publication type	Design	Data source	Finding
MSH, [no date]	Project report	Baseline/ endline,	Household survey Stratified random sampling	Use of injectables among MWRA increased in 3 intervention sites ⁴³ 2 to 15% (Farza) 6 to 27% (Islam Qala) 7 to 18% (Tormay) CPR 9 to 34% (Farza) 20 to 44% (Islam Qala) 24 to 51% (Tormay)

Bangladesh (Matlab)

Reference	Publication type	Design	Data source	Finding
Phillips, Hossain, Huque, et al., 1989	Book	Longitudinal, intervention research	Community based, demographic surveillance	Over 40% of CPR in project area is attributed to use of DMPA ⁴⁴
Bhatia , Mosley, Faruque, et al., 1980	Peer review journal	Longitudinal, intervention research	Community based, demographic surveillance	Use of injectables increased in intervention areas over 18 month period. 0.5 to 26.8% (CDP control) 2 to 26.8% (CDP distribution area) ⁴⁵ CPR 4.9 to 53% (CDP control) 8.9 to 49.8% (CDP distribution area)

⁴³ Baseline conducted October 2005. Endline taken in June 2006.

⁴⁴ Researchers note that “even minor lapse in supply of DMPA vials produced discernable declines in overall contraceptive practice.”

⁴⁵ Contraceptive Distribution Program (CDP) was the predecessor to the Family Planning-Health Services Project (FPHSP). The FPHSP was implemented in areas where CDP had worked and in a control site where no previous intervention had taken place.

Bangladesh replication (Abhoyagar and Siraigoni)

Reference	Publication type	Design	Data source	Finding
Huque et al., 1986 (as referenced in Rahman, Islam, Maru, et al., 1992)	Project report	Longitudinal, replication	Client interview	better client satisfaction, accessibility to services, confidence in method and better counseling and side effect management in intervention area compared to clinic-based services
Rahman, Islam, Maru, et al., 1992		-	-	providers expressed pride and satisfaction at being able to deliver injectables
		Sample Registration System 1983 pre-intervention 1991 post-intervention National ave based on CPS		Use of injectables 0.1% to 19% (Abhoynagar) 0.1% to 12% (Sirajgani) National average for injectable use in 1990 was 2.4% CPR 21% to 47% (Abhoynagar) 11%, to 41% (Sirajgani) National average for injectable use in 1990 was 2.4%
		Quasi-exp design ⁴⁶	Sample Registration System (Dec 1988 – Dec 1990)	8.5% of MWRA were inj clients of door-step delivery, 1% were inj clients of clinic-based services, once door-step services were introduced in control area # of inj users rose from 400 (July 1989) to 1400 (3 mon) to 2800 (Dec 1990). (Sirajgani)
	Project Report (Sirajgani)	Quasi-experiment	Monitoring Monthly “drop-out” rate (1988-1989)	“drop-out” rate ranged from 2.2 to 7.5% (intervention) 3.2 to 20.6% (clinic-only) Authors note that the “drop-out” rate for any given month was always higher for the clinic-based program
Salway et al 1991 (as refer in Rahman, Islam, Maru, et al., 1992)	Project Report (Abhoy)	Quasi-experiment	Unknown 6 mon ⁴⁷ (1986-1990)	76.1% intervention (Abhoy) 41.7% comparison (clinic-only)
Phillips, Hossain, Huque, et al., 1989	Book		Regression analysis	Introduction of home based DMPA delivery in govt areas under optimal treatment conditions would result in 8% increase in CPR in the first year ⁴⁸

⁴⁶ In Sirajgani half the upazila (5 unions) continued with clinic-only services, in (5 unions) doorstep inj services were introduced. Baseline taken in Dec 1988, in July 1989 doorstep delivery was added to 5 control unions where clinic-only services were previously available.

⁴⁷ Author notes that further comparison, beyond 6 months, could not be done due to the low number of continuers in the comparison area.

⁴⁸ Researchers estimate impact would be half as great (approx 4%) in the absence of program supports.

Bangladesh expansion (8 thanas)

Reference	Publication type	Design	Data source	Finding
Khuda, Kane, and Phillips, 1997	Project report	Project monitoring	Expert consensus	CHW “were found to be capable of providing injectables, safely and effectively including screening and counseling” p 121
Mirza, 1996 (as referenced in Khuda, Kane, and Phillips, 1997)	Project report	Project monitoring	secondary	four fifths of clients were counseled on side effects
Mirza, Khuda, Ashraf, et al., 1994	Presentation	Project monitoring	Direct observation (n=1089)	CHW and paramedics maintained "no touch" technique to prevent infection 90%, almost all disinfected area 50% of clients were given "full information" including side effects and danger signs. No differences found in the quality of services provided by CHW and paramedics ⁴⁹
			MIS (March 1993 to July 1994)	2-fold increase in inj use in all thanas
			MIS data	43% of inj clients were not using contraception prior to program introduction
			SRS 6 mon, 12 mon	79%, 49% continuation rate

Bangladesh (TAF) – The Asia Foundation

Reference	Publication type	Design	Data source	Finding
Sadiq, 1994	Presentation	Project monitoring	Project monitoring	No abscesses or inflammation reported
			MIS (preliminary data)	inject use in intervention sites increased from 12% to 16%
		Quasi-experimental	8 mon (Jan to Aug 1994)	“drop-out” rate for inject clients 2.7 in clinic only areas 2.1 in areas implementing doorstep delivery

Bangladesh (LIP) Local Initiative Programme

Reference	Publication type	Design	Data source	Finding
Azim, 1994	Presentation	Project monitoring	Records (n=10,118)	0.4% (41) reported pus at injection site
			MIS (Aug 1993 to Aug 1994)	inj use rose from 11% to 15% of the method mix. Contraceptive Acceptance Rate inc from 59% to 65%,
			MIS data (n=8994)	45% of inj clients were not using contraception prior to program

⁴⁹ Comparative analysis conducted among clients of female village workers and female welfare assistants

Bangladesh (Pathfinder)

Reference	Publication type	Design	Data source	Finding
Shahnaz and Hossain, 1994	Presentation	Monitoring	MIS (9 mon)	number of inj users increased by 39% in rural areas (4890 to 6791) and doubled in urban areas (1771 to 3627) ⁵⁰

Bangladesh (Project unspecified/multiple)

Reference	Publication type	Design	Data source	Finding
Khuda, Kane, and Phillips, 1997	Project report	Impact of program at national level	Unknown (1985 to 1993/4)	Increase in the relative share of injectables provided by fieldworkers inc from 5% to 36% (pg 101)
	Project report	Longitudinal, replication	SRS 6 mon, 12 mon, 18 mon ⁵¹	90%, 64%, 49% Matlab ⁵² 68%, 49%, 33% Sirajgani 73%, 58%, 46% Abhoynagar
Phillips, Hossain, Huque, et al., 1989	Book	Longitudinal, intervention research	First-method DMPA life table 6 mon, 12 mon, 18 mon	86%, 69%, 58% Matlab 76%, 35%, 16% Sirajgani 82%, 46%, 26% Abhoynagar

Bolivia

Reference	Publication type	Design	Data source	Finding
McCarragher, 2000	Project report	Longitudinal, qualitative study	Client interviews; 1 st inj (n=29) 2 nd inj (n=25) 3 rd inj (n=23)	The majority of users received counseling on side effects at 1 st injection; few clients received similar counseling at subsequent injections ⁵³
			Client interview	After their 3 rd shot, 23 (100%) clients would recommend DMPA to a friend
			CHW FGD	Providers felt that clients were satisfied with services provided by CHW
			CHW FGD	CHW expressed overall satisfaction with support and supervision, most providers felt comfortable with provision of injectable ⁵⁴
			Study records (n=29)	45% (n=13) chose home-based administration of inj over clinic-based services
			Client interview	41% (n=29) ⁵⁵ were first modern method used
			Client interview 6 mon	79% (23 out of 29) of clients continued through 3 doses. Rates were similar for CHW and clinic continuation (11 out of 13; CHW) (12 out of 12, clinic) ⁵⁶

⁵⁰ It is unclear if reporting is based on clients of doorstep services only or includes clients of clinic care also.

⁵¹ Cumulative continuation rate from 1983 to 1990.

⁵² Matlab continuation rate is referenced from Akbar et al., 1991.

⁵³ Analysis does not distinguish among clients of CHW and clinical providers.

⁵⁴ One of the five CHW involved in the focus group discussion expressed discomfort with provision of injectables.

⁵⁵ Report does not disaggregate new users by preferred provider (CHW or clinic).

⁵⁶ One participant dropped out of the study. Three additional clients discontinued use of injectables after the first injection. It is unclear if they received their first shot from a CHW or clinician.

Ethiopia

Reference	Publication type	Design	Data source	Finding
Prata, Guessesw, Cartwright, et al., 2009	Preliminary report	Non-randomized community trial	Client interview (n=713)	Induration 0.4% (1/282) paramedic 2.7% (11/405) CHW Ulceration 0.4% (1/282) paramedic 0.2% (1/405) CHW Non statistically significant difference in rates ⁵⁷
			Client interview (n=713)	No difference detected in client reporting being very/ satisfied with provider among clients of CHW (95%) and clinicians (95%)
			Study records (n=976)	Percentage of clients receiving injection by type of provider 59% CHW 41% clinicians
			Study records (n=976)	approx 35% of paramedical and 38% of CHW had never used contraception, difference is not statistically significant
			Study records (n=976)	clients of paramedical and CHW are similar in terms of age, marital status, and number of children. CHW reported a higher percentage of clients with no education than paramedicals (90% v 78%)
			Study records (n=976) 13 weeks	94% paramedic 99% CHW Difference is statistically significant

⁵⁷ Comparison is among Community-based distributors and Health Extension Workers.

Guatemala (APROFAM)

Reference	Publication type	Design	Data source	Finding
Fernandez, Montufar, Ottolenghi, et al., 1997	Project report	Quasi-experimental design	Field visits	<i>"all [CHW]... demonstrated an accurate knowledge"</i> of DMPA
			Clinic records	0.4% (3) of CHW and 0.5% (2) of clinic clients reported infections at injection site
			DMPA current user interview (n=47)	All women interviewed who were receiving injections from a CHW or an educator said they planned to continue using DMPA ⁵⁸
			Clinic records (n=1192) 15 mon	779 (65%) preferred CHW 410 (35%) preferred clinicians Enrollment
			Client interview (n=47)	60% of respondents were not using any FP method before initiating injectable use ⁵⁹
			Clinic records (n=1192)	65% (781) first-time FP users ⁶⁰
			Clinic records (n=1192)	83% (417) of CHW clients were Mayan, 17% (83) of clinic clients were Mayan
			SPSS life table procedure (n=1192) 12 mon	90.6% continuation rate for CHW clients 90.9% continuation rate for clinic clients

⁵⁸ 77% of those interviewed chose to have injections from CHW, 13% and from clinic staff, 10% from educators. Selection criteria for interviews are unclear.

⁵⁹ Report does not disaggregate by type of provider.

⁶⁰ Report does not disaggregate by type of provider.

Guatemala (Sololá)

Reference	Publication type	Design	Data source	Finding
Ramirez, 2008	Project report	Longitudinal Cohort	Client interview (n=193) 1 st follow-up (n=189) 2 nd follow-up	For both first and second follow-ups, over 98% of women reported that they felt safe and secure after the shot was administered.
			Provider interview (n=97) 1 st follow-up (n=50) 2 nd follow-up	For both 1 st and 2 nd follow-ups, 100% of CHW had correct knowledge ⁶¹ of injection provision
			Provider survey	At first follow-up, CHW (n=97) reported that about 80% of their clients were satisfied with the injectable. At second follow-up, increased to 96%.
			Client survey	At first follow-up, 98% of Depo Provera clients reported being satisfied with the Depo Provera services provided by their CP. At second follow-up it was 95%.
			Client interviews (n=193)	75% of clients had not used injectables previously 22% reinitiators of injectables
			Provider interview (n=116) baseline (n=97) 1 st follow-up (n=50) 2 nd follow-up	At baseline, 28% of CHW said they would be uncomfortable providing DMPA 1% and none reported similar discomfort at 1 st and 2 nd follow-up, respectively.

Haiti

Reference	Publication type	Design	Data source	Finding
Jean-Louis, 2009	Personal communication	Project monitoring	Clinic records (n=11,261) ⁶²	No reported morbidities from May 2008 – Feb 2009

⁶¹ Correct knowledge defined as knew how and where to administer the injection as well as the correct length of time between shots.

⁶² Records include clients of clinic and community-based services.

Madagascar

Reference	Publication type	Design	Data source	Finding
Hatzell Hoke and Wheeler, 2008	Project report	Pilot study	Standardized test (n=62)	100% scored 14 pts or above <i>Fundamental Quality Score</i> ⁶³
			Supervisor assessment (n=25)	96% of workers supervised mastered the screening checklist
			Client survey (n=303)	Report no problem with injection site 97%
			Supervisor assessment (n=25)	93% of workers mastered safe injection technique
			Client survey (n=303)	counseled on side effects 70%
			Supervisor assessment (n=25)	99% of workers provide "complete and accurate" counseling
			Client survey (n=303)	100% of clients were satisfied with the way they received the injection
			CHW interview (n=61)	100% reported they would like to continue providing injectables
			CHW registers 6 mon	1662 users
			CHW registers (n= 1662)	41% new users or previous users who were not currently using contraception
			Client interview (n=303)	28% reported never using family planning
			CHW registers (n=1662 users) 924 out of 1662 eligible for 2 nd inj	93% received 2 nd injection of which 96% were provided by CHW
			Client interview (n=303) 199 out of 303 eligible for 2 nd inj	96% received 2 nd injection of which 98% were provided by CHW

⁶³ The study developed a *Comprehensive Quality Score* interviews with CHW. According to researchers, the score reflects "a set of indicators of safe, high quality provision of DMPA, including correct use of the screening checklist, safe injection technique, accurate and complete counseling, and proper syringe disposal." The maximum possible *Comprehensive Quality Score* was 27. A *Fundamental Quality Score* was also developed based on a selection of questions representing essential issues of DMPA provision. The maximum possible *Fundamental Quality Score* was 18.

Peru

Reference	Publication type	Design	Data source	Finding
Leon, 2000	Project report	Quasi-experimental design with matched controls	Standardized test ⁶⁴ (n=180) ⁶⁵	CHW scored <i>significantly higher</i> than equivalent untrained health workers
			Simulated client (post retraining n=102)	After retraining and introduction of job aid ⁶⁶ , approx. 70% attainment of quality standards ⁶⁷
			Service records	Performance of government workers located in the same community as NGO CHW did not differ from the performance of government workers in areas without NGO CHW. Researchers propose that this finding supports the hypothesis that NGO CHW expand access to clients not already served by government workers.

⁶⁴ Pre and post measures based on the *Family Planning Knowledge Test*.

⁶⁵ Project utilized government (Health Workers) and non-government workers (Community promoters). The project report fails to consistently distinguish these two groups.

⁶⁶ *ABC of Family Planning for Nonprofessional Providers* is an algorithmic instrument developed to guide counseling and offers technical information for the provider. The tool was developed as part of the project to improve the quality of provider counseling.

⁶⁷ Retraining was implemented due to low quality assessed in first round of simulated clients. After retraining, a second round of simulated clients concluded that trained HWs and promoters were able to deliver rural family planning, including DMPA, with nearly 70-percent attainment of the quality standards. The effect size of the intervention after retraining was .89.

Uganda

Reference	Publication type	Design	Data source	Finding
Stanback, Mbonye, Bekiita, 2007	Peer review journal	Non-randomized community trial	Client survey (n=748) ⁶⁸	0 abscesses reported ⁶⁹ Equivalence between CHW and clinic care
			Client survey (n=777)	85% CHW clients and 86% clinic clients were counseled (p-value .49)
			Client survey (n=777)	95% CHW clients and 93% clinic clients were satisfied with care (p-value .27)
			Study records 9 mon	562 (59%) CHW clients 383 (41%) clinic clients enrollment
			Client interview (n=777)	86% CHW clients 76% clinic clients report first time use of DMPA
			Client survey (n=777)	Clients of CHW were more likely to be single (16% v 9%) than clients of clinic-based services Clients of clinic-based services were more likely to have no education (16% v 8%) and have supportive husbands (52% v 41%)
			Client interviews (n=777) 13 wks after 1 st inj	88% CHW clients received 2 nd shot 85% Clinic clients received 2 nd shot OR = 1.2 (CI = .8 - 1.9) for CHW continuing compared to clinic clients
Poss, Stanback, Mbonye, et al., 2009	Unpublished manuscript	Survival analysis (Kaplan-Meier)	Client interview (n=308 clients of CHW) (n=217 clients of clinic) ⁷⁰ 3 yr follow-up	Clients of CHW continued with inject for a longer period of time before discontinuing (15 mon v 10 mon, p=0.043), were less likely to report discontinuation due to side effects (15% v 29%, p<0.001), reported experiencing fewer stock-outs than clinic-based clients (5% v 15%, p<0.001), and more likely to report discontinuing to become pregnant again (48% v 27%, p<0.001).

Uganda (Minnesota International Health Volunteers (MIHV))

Reference	Publication type	Design	Data source	Finding
Erlich, 2009	Personal communication	Project monitoring	Supervisor report	No injection site morbidities Injection done with "proper cleanliness, safety, and technique."
			Study records	792 units of DMPA dispensed, wide variation among implementation sites

⁶⁸ Number of clients who answered this question is slightly less than the total number followed-up. Detailed results are reported in the Project Report (Stanback et al., 2005).

⁶⁹ Clients of CHW had slightly more reported problems compared to clinic clients (n=24 v n=8). The statistical test found no difference among provider groups. Detailed results are reported in the Project Report (Stanback et al., 2005).

⁷⁰ Loss to follow-up from enrollment was significant in both CHW and Clinic groups (45% and 50% respectively).