

# Expanding Community Based Access to Injectable Contraception

Results of a Pilot Study in Zambia

A Report from FHI 360/PROGRESS, Zambia  
Ministry of Health and ChildFund Zambia

November 2011





## Acknowledgements

Suggested citation: Chin-Quee D, Katz K, Mbewe RK, Jumbe L, and Bratt J. *Expanding Community Based Access to Injectable Contraception: Results of a Pilot Study in Zambia*. Research Triangle Park, NC, USA and Lusaka, Zambia: FHI 360 and Zambia Ministry of Health, 2011.

FHI 360 takes this opportunity to express profound gratitude and regards to the following organizations and individuals for their contribution to the successful completion of the study “Evaluation of a Pilot Study of Community-Based Distribution of DMPA by Community Health Workers in Zambia.”

We express gratitude to the Zambian Ministry of Health, in particular the Departments of Public Health and Research and Technical Services, which under the guidance of Dr. Reuben K. Mbewe and Dr. Maximilian Bweupe allowed us to implement the intervention and provided support throughout and beyond the life of the study. We also owe a debt of gratitude to our implementing partner, ChildFund Zambia, whose community health workers and supervisors worked diligently to ensure the success of the intervention. Special thanks to Mrs. Lydia Jumbe and Mrs. Doras Chirwa who were instrumental in executing ChildFund Zambia’s commitment to this study.

We appreciate the excellent work of FHI 360 staff over the entire course of study, especially from Mrs. Mavis Mwale, Project Manager in Zambia, who worked tirelessly to ensure the coordination of training, data collection, data management, and analysis in the field. Dr. Andrew Kumwenda and Mr. Mushota Kabaso, ex-FHI 360/Zambia staff members also contributed to the coordination and management of fieldwork. We would also like to thank the Research Utilization partners, Amanda Abbott, Crystal Dreisbach, Elizabeth Futrell, and Morrissa Malkin whose involvement from beginning to end of the study ensured its success and continued impact through scale-up activities. Finally, we acknowledge the technical expertise and support of Drs. John Stanback and Maggwa Ndugga who were invaluable when challenges emerged.

This study was made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the terms of FHI Cooperative Agreement No. GPO-A-00-08-00001-00, the Program Research for Strengthening Services (PROGRESS) project. The opinions expressed herein are those of the authors and do not necessarily reflect the views of USAID.

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## **Executive Summary**

### **Objectives**

The study examined the incremental or additive effect of community based distribution (CBD) agents providing DMPA, including: 1) their ability to provide DMPA to clients safely and effectively; 2) the acceptability of, and client satisfaction with, CBD agent delivery of depot medroxyprogesterone acetate (DMPA), including continuation rates; 3) if and how the workload of CBD agents and their supervisors changed with the addition of CBD provision of DMPA; and 4) the additional cost per couple-years of protection (CYP) of adding DMPA to the existing CBD-delivered family planning program of ChildFund Zambia, the implementing partner in the study.

### **Methods**

Cross-sectional and longitudinal data were collected in a pre-test, post-test design. Forty CBD agents were trained to provide DMPA in two districts. The pre-intervention cross-sectional data came from interviews with 16 supervisors and 40 structured observations during the practicum training; the post intervention data came from interviews with 11 supervisors, 253 clients (randomly selected), and the 40 trained CBD agents. Longitudinal data on more than 4,241 clients who received DMPA, pills, or condoms from the trained CBD agents during the 12-month pilot provision of services came from family planning registers (2010-2011) and from the district monthly service statistics. Calculations of the cost of the intervention used data from key informant interviews, record reviews, and periodic progress reports to identify all intervention-related activities and resources used.

### **Findings**

- CBD provision of DMPA is acceptable and expands access to family planning methods. About 35% of the women who received a method reported that their first DMPA injection was their first use of a family planning method.
- CBD agents can safely provide injectable contraceptives.
- CBD provision of DMPA is having an impact on some aspects of the health system, including the workload of the CBD agents, the level of training needed for this new service, and the impact of supervisors.
- Some programmatic aspects of the pilot program need to be strengthened if the program is going to continue and expand, including better training on reinjection windows and systems to ensure less stock outs.
- Continuation rates were much higher than pills and the standard 50% expected for DMPA generally, with 63% of the CBD clients continuing after one year (at least four injections).
- The cost per CYP for the intervention ranges from about US\$11 to \$61, depending on the level of DMPA continuation attributable to CBD provision.

## **Conclusion**

Communities are accepting DMPA provision by CBD agents and the service is expanding access to family planning. A substantial percent of new DMPA users had never used family planning, while other women are switching from other contraceptive methods such as pills and condoms. For those women using DMPA, they report that they like it for its effectiveness and ease of use and they like CBD provision of it because it is more convenient to go to a CBD agent compared to the health center. Even though many clients experienced side effects, almost all indicated that they are satisfied with using DMPA. The high continuation rates over a 12-month period support the high levels of satisfaction. Most supervisors and all CBD agents reported that their workload increased. Adding agents could help lighten the load as could making sure needed supplies and support are available at the health centers when the agents come to them so that their time is not wasted. Regarding the added cost, effective protection against unwanted pregnancy enables the health system and individuals to avoid downstream costs of antenatal care and delivery, as well as PMTCT costs in the case of HIV-infected mothers.

## **Background**

Zambia has made significant progress in expanding its family planning program. The 2007 Demographic and Health Survey found a contraceptive prevalence rate (CPR) of 33% among currently married women for modern methods and 44% CPR among sexually active unmarried women, up sharply from 2002.<sup>1</sup> However, the rate in urban areas for married women was much higher than in rural areas (42% compared to 28%), and the total fertility rate (TFR) nationwide increased from 5.9 in 2002 to 6.2, also due to lower use in rural areas. In urban areas, TFR remained steady at 4.3, but the rate increased in rural areas from 6.7 to 7.5. Further, the 2007 ZDHS reported unmet need for family planning at 27% and estimated that if all currently married women with unmet need used a family planning method, the CPR for all methods would increase from 41% to 67%.

Lower utilization of family planning (FP) services among women in rural areas is due mainly to traditional misconceptions and myths, long distances to health facilities, frequent stock outs at both the health facility and community levels, and inadequately trained personnel (long queues at health facilities). Community-based distributors (CBDs) play an important role in providing FP services to women in these areas, though their impact is limited by providing only condoms and oral contraceptive pills. In Zambia, injectable contraceptives, especially depot medroxyprogesterone acetate (DMPA) are quite popular among women of reproductive age in rural areas of the country, but have only been provided in the clinic setting. CBD of DMPA has the potential to reach larger numbers of rural women and increase contraceptive uptake.

Studies of CBD of injectable contraceptives have shown that this method of family planning service delivery can be extremely effective and safe.<sup>2</sup> A study of Save the Children community reproductive health workers (CRHWs) in Uganda was particularly instructive in demonstrating

that the DMPA clients of CRHWs were as satisfied with the quality of care they received and with their method as DMPA clients of clinic-based providers. Moreover, clients of CRHWs continued use of DMPA as long as their clinic-going counterparts in that they received a second injection during the course of the study. As importantly, there were very few reports of injection site morbidities by CRHW clients and no reports of accidental needle sticks by the community-based workers themselves—demonstrating the safety of DMPA provision by CRHWs.<sup>3</sup> Additionally, a technical consultation organized by the World Health Organization (WHO) in June 2009 reviewed the evidence and experiences from programs designed to expand access to injectable contraceptives through provision by community health workers. These experts concluded: “...there is sufficient evidence to support the introduction, continuation, and scale-up of community-based provision of progestin-only injectable contraception.”<sup>4</sup>

In November 2008, ChildFund Zambia asked FHI 360 (formerly named Family Health International) to collaborate on a pilot study to introduce injectable contraceptives to its existing CBD program. The Zambia Ministry of Health approved and supported the pilot project. ChildFund Zambia is part of the international child protection and development agency, ChildFund International and has been working in Zambia since 1983. It currently operates in 32 communities in eight districts (Chibombo, Chongwe, Kafue, Luangwa, Masaiti, Mumbwa, Lusaka, and Nyimba) in Central, Copperbelt, Eastern, and Lusaka provinces. ChildFund Zambia’s program of community-based distribution of family planning services is located in two districts in Zambia.

## **Objectives, Design, and Methods**

The study sought to address the problem of limited access to family planning services in rural areas and specifically to provide information to the Ministry of Health (MOH) and other stakeholders on the safety, effectiveness, and costs of the pilot program of CBD of DMPA in selected districts. The results were then intended to inform a comprehensive strategy on instituting and scaling up CBD provision of injectable contraceptives. The specific objectives of the study were:

1. To examine the effect of adding DMPA provision by CBD agents to the provision of oral contraceptive pills and condoms at the district level;
2. To assess CBD agents’ ability to provide DMPA injections to clients safely and effectively;
3. To assess acceptability of, and client satisfaction with, CBD agent delivery of DMPA, including continuation rates;
4. To determine if and how the workload of CBD agents and their supervisors changed with the addition of CBD provision of DMPA; and
5. To determine the incremental cost per couple-years of protection (CYP) of adding injectable contraceptives to ChildFund Zambia’s existing CBD program.

The study objectives and design evolved from a stakeholder meeting held in Lusaka on July 1, 2009. The study included cross-sectional and longitudinal data in a pre-test, post-test design. Cross-sectional data were collected through structured observations of provision of DMPA during CBD agents’ practicum training, interviews with CBD agents and their supervisors, and

interviews with a subset of CBD DMPA clients. Longitudinal data on method continuation were extracted from CBD agent family planning registers from February 2010 through February 2011 as well as data on pill, condom, and DMPA distribution from the district monthly service statistics from January 2009 to December 2010. The study was approved by FHI 360's Protection of Human Subjects Committee and the local institutional review board, ERES Converge.

Mumbwa and Luangwa districts were selected as the sites for the study because they include some of the most hard-to-reach, poorest communities and have very limited access to health care services. Luangwa is located in Lusaka province where the provincial TFR is 6.4 and the CPR for modern method use is 27%. Mumbwa is located in Central province where the provincial TFR is 4.1 with 40% modern method use. The CPR for modern method use in Mumbwa and Luangwa districts is 33% among women of reproductive age who are currently married or in union, while the unmet need for family planning is estimated at 56%.<sup>5</sup>

In November 2009, a training of trainers including ChildFund Zambia personnel and MOH master trainers was conducted. Then, these master trainers trained the CBD agents selected for the study, as well as their supervisors, from ChildFund Zambia and the District Health Office (DHO). The training highlighted the use of a checklist developed by FHI 360 for safe provision of DMPA based on medical eligibility criteria from the World Health Organization (WHO), the *Family Planning Global Handbook for Providers* from WHO, appropriate use of auto-disable syringes, and measures for safe sharps disposal.<sup>6</sup> The training consisted of one week of classroom training followed by a supervised clinic-based practicum over a period of about two weeks and was conducted in December 2009 (Luangwa) and in January 2010 (Mumbwa). Forty CBD agents were trained; the evaluation was conducted in the catchment areas of these agents in these districts. ChildFund Zambia and FHI 360 collaborated on the development and adaptation of the curriculum and materials used in the training.

Once trainees met competence standards during the practicum phase of the training, including correct administration of four to six injections, they attended a graduation ceremony where they were given a certificate certifying that they could provide DMPA. In addition, they were presented to the community with the endorsement of the DHO. These measures were designed to help the community have confidence in the CBD agents' skills in providing DMPA injections. Upon graduation the agents were able to return to their communities and begin providing DMPA on their own. Unsupervised provision in both sites began in February 2010.

The coordinator for the study was based at the FHI 360 Zambia Prevention, Care and Treatment (ZPCT) Office in Lusaka and supervised the overall data collection process. The Study Coordinator supervised the collection of longitudinal data on more than 3,600 clients who had DMPA injections by CBD agents during the 12-month collection period of February 2010 to February 2011. For the cross-sectional data, the Study Coordinator conducted pre- and post-test interviews with the District Health Office and ChildFund Zambia supervisors and also trained and supervised two teams that administered interviews to CBD agents and clients. These data were collected from November 2010 through February 2011, as summarized in Table 1.

Calculations of the cost of the intervention used data from key informant interviews, record reviews, and periodic progress reports to identify all intervention-related activities and resources used. Activities included in the calculations were preparation for service delivery and initial service delivery. Costs for the preparation phase included the training of trainers (TOT) workshop and the training of the CBDs themselves. The focus of the initial service delivery phase was the supportive supervision visits made during the initial period of the intervention and the contraceptive methods provided to clients. The calculation also included an estimate of the costs of managing intervention activities over the entire intervention period. ChildFund Zambia and FHI 360 staff collected information on the costs of these activities using custom Excel spreadsheets. Most of the costs reflect actual expenditures, except for personnel costs, which were based on MOH salary scales for positions considered to be equivalent to those of FHI 360 and ChildFund Zambia staff who implemented the intervention.

**Table 1: Number of interviews and observations conducted**

Method	Pre-intervention sample	Post-intervention sample
District health supervisors	14	9
ChildFund Zambia supervisors	2	2
Structured observations	40	--
CBD clients	--	253
CBD agents	--	40

The results of the study are described below in five sections: the effect of the program on contraceptive use and method continuation, the quality of services provided by the CBD agents, client acceptability and satisfaction, health systems issues focusing on workload and resources, and issues related to the cost of the intervention, including cost per couple year of protection (CYP) of providing DMPA by CBD agents.

## **Contraceptive Use and Method Continuation**

District Health data on the number of pill packs and injections provided were used to calculate CYP for each method in each district for the time period of January 2009 until December 2010. CYP was calculated using the conversion factors of four DMPA injections and 15 pill cycles per CYP. The analysis assumed that distribution of a pill pack is the equivalent of four weeks of pill use, acknowledging that a woman may in fact not complete or even use any of the pills in the pack. Figures 1 and Figure 2 show the number of CYPs for DMPA and pills for approximately one year prior to and after initiation of the intervention in Mumbwa and Luangwa respectively. CYP of pills and DMPA are much lower in Luangwa compared to Mumbwa, and the overall increases during the data collection period are far more modest. In both districts, pill CYP remains more or less constant throughout this time period. In Mumbwa, DMPA CYP is similar to pill CYP until a few months prior to the initiation of CBD provision of DMPA in February 2010. It then begins a steady increase which becomes sharper beginning a few months after the intervention begins. DMPA CYP was higher than pill CYP for most of this time period in

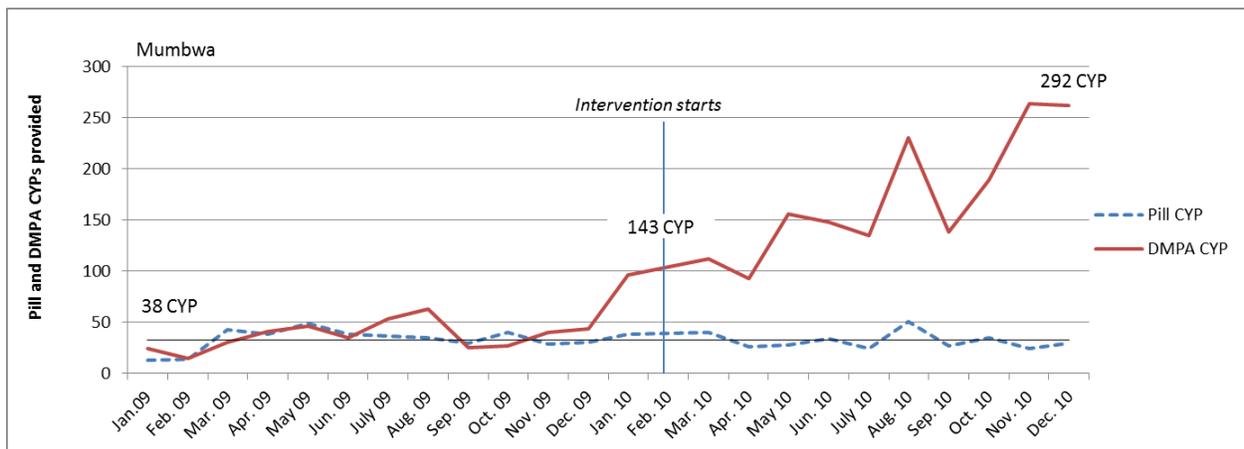
Luangwa and experiences more peaks and troughs than in Mumbwa (which may be a reflection of resupply cycles and/or stock outs). Nonetheless, there is a slight upward trend in DMPA CYP in Luangwa.

Looking at pill and DMPA CYP together, the data suggest an increase in the number of contraceptive users in the districts over this time period. While the increase cannot be directly attributable to the intervention, the increase becomes more pronounced after the intervention begins (though more so in Mumbwa than Luangwa). In January 2009, total pill and DMPA CYP for both districts was 63. This increases to 178 at the start of the intervention and to 350 in December 2010.

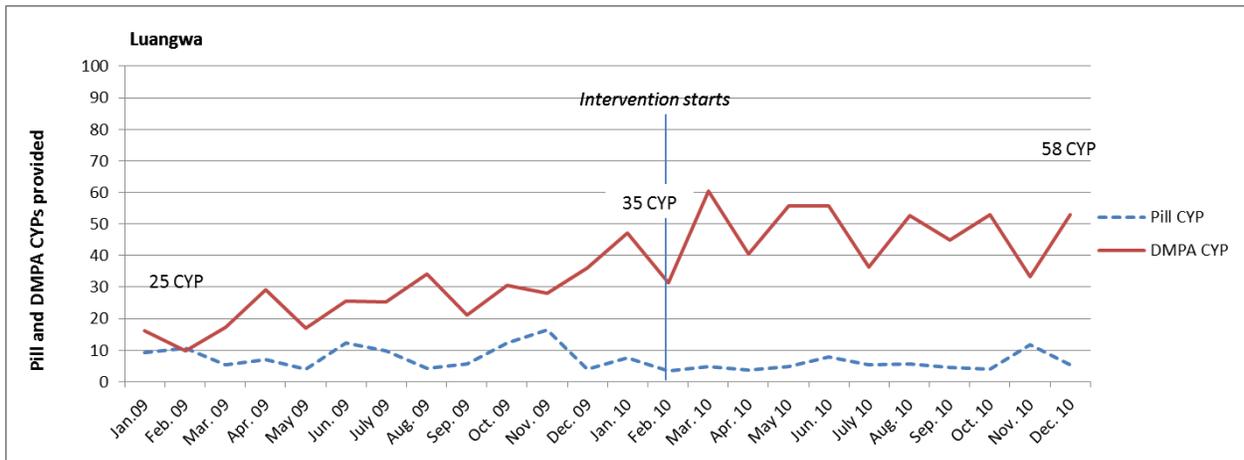
The client survey data provide additional evidence that CBD DMPA distribution attracted many new users to contraception; 39% of the clients reported that their first CBD DMPA injection was the first time they used a family planning method. There was a slightly higher percent of new users in Mumbwa compared to Luangwa (42% vs. 35% respectively). In addition, CBD agent data point to the impact DMPA had on demand for the other family planning methods that agents supply, namely pills and condoms. Most of the agents (92.5%) said that the number of clients wanting pills or condoms decreased since they began providing DMPA, while the rest said demand for these other methods increased.

It should not be surprising that CBD of DMPA may be increasing contraceptive use in these districts. Access to CBD agents is easier for clients than to health centers. Clients reported that on average it takes them 82 minutes (range of five to 240 minutes) to travel from their home to the nearest health care facility where family planning is offered. Travel time is substantially less to the home of the CBD agent who provided the client with DMPA with an average of 28 minutes travel time (range one to 120 minutes). All clients who had used DMPA before had previously obtained their injections from a health center. For those who switched from a clinic to a CBD agent, the reason cited by far the most often was because the agent is closer than the clinic (73%).

**Figure 1: District Health clinic data: CYPs for pill packs and DMPA in Mumbwa**



**Figure 2: District Health clinic data: CYP for pill packs and DMPA in Luangwa**



## Quality of DMPA Services

The quality of DMPA service provision was measured through direct observation of agents during their training period, and through interviews with the agents and their clients approximately 10 months after the beginning of DMPA service provision. Quality measures concentrated on the steps for providing injections, focusing on infection prevention and safety, general knowledge about DMPA, the essential information provided to clients, and understanding of reinjection criteria.

During their training, the CBD agents were taught 11 steps to follow to prevent infections at the injection site. While they were observed to follow an average of nine steps during their initial assessment, nearly all CBD agents (93%) were observed to follow all 11 procedures during their last assessment. Of the three agents who did not follow every procedure, each of these agents only missed one step. In addition, there were four counseling items they were taught to convey to clients and six procedural steps they needed to follow. At the initial assessment they followed an average of 2.4 and 4.8 respectively. At the final assessment this increased to 3.8 and 5.8 respectively; the majority followed every step. The only two counseling items that were missed at the final assessment (by only six agents) were to describe the injection procedure to the client and to encourage the client to return if they had any questions. The only procedural item that was missed by seven of the agents was recording information on the client card and other data collection forms.

While observations took place during their training, survey interviews with agents and clients occurred 11-12 months later. During the interview, agents were given a piece of fruit and asked to describe the steps they follow when providing a DMPA injection after they washed their hands with soap and water, demonstrating with the piece of fruit. It should be kept in mind, however, that while the fruit represented a proxy for a woman, it is possible that the agents did

not describe or recall all of the steps since they were not in a real life situation. Nonetheless, since the results show that agents may not be following all procedures that they were taught and were observed to perform in the training, further investigation may be warranted. Tables 2 and 3 show the results of six of the main injection steps as observed during the training and as described by the agents in the survey interview respectively. The two steps that were described least often in the survey (by only 8% of agent respondents) were “expels air from syringe” and “washes hands after the procedure.” While 75% or more reported the remaining steps, each step shows decreases from the observations made during their practicum training nine months earlier.

**Table 2: Observation of CBD agent injection procedures during training (N= 40, % shown)**

Element of injection procedure	
Double-checks the bottle for content, dose, and expiration date	100
Rolls bottle between palms or shakes gently	100
Opens sterile package for syringe/needle (attaches needle if needed)	100
Expels air from syringe	100
Places the used syringe into the sharps container	100
Washes hands (after injection)	98

**Table 3: Description of injection procedures by CBD agents in survey while demonstrating on fruit (N=40, % shown)**

Element of injection procedure	
Double-checks the bottle for content, dose, and expiration date	75
Rolls bottle between palms or shakes gently	82.5
Opens sterile package for syringe/needle (attaches needle if needed)	92.5
Expels air from syringe	7.5
Places the used syringe into the sharps container	92.5*
Washes hands (after injection)	7.5
* The three agents who did not dispose of the used syringe into the sharps container indicated that they put it in a cardboard box, which is also acceptable.	

Regardless of the survey results with the CBDs, their supervisors believed that the CBD agents were providing good quality DMPA services to clients. ChildFund Zambia supervisors are responsible for overseeing the work of the agents, and both supervisors had the opportunity to directly observe CBD agents providing DMPA. Both felt that all of the agents they supervised were well qualified to provide DMPA and that they had all mastered the necessary skills, e.g. using the checklist to rule out pregnancy, filling the single-use syringe, identifying the correct place on the woman’s body to inject, providing intramuscular injections, and counseling women on possible side effects. One of the supervisors also reported that all of the agents supervised had mastered explaining to the women when she should return for her next injection; the other supervisor said that most of the ones she supervised had mastered this skill.

General knowledge and counseling of clients was reasonably good. All agents correctly responded that DMPA provides protection against pregnancy for three months or 12 weeks. They also all reported that they counsel their clients about side effects women may experience. During the training, the main side effects they were taught about were prolonged or heavy bleeding, irregular bleeding or spotting, headaches, amenorrhea, mood changes, weight gain, and abdominal bloating and discomfort. The extent to which they report mentioning these side effects varies (see Table 4). The ones they report the most are heavy bleeding (80%), headaches (68%), spotting (65%), amenorrhea (60%), and irregular bleeding (58%). The agents reported that they discuss weight gain, abdominal discomfort, and mood swings much less often (28%, 28%, and 25% respectively).

Overall, clients reported receiving good quality services from the CBD agent. Most said that the agent talked to her in a friendly way (96%), that they trusted the agent to protect their private information (97%), and that they were satisfied with the way the agent gave the injection (98%). Client knowledge about DMPA was adequate in some respects though some gaps were evident. Most (94%) knew that DMPA provides protection against pregnancy for three months/ 12 weeks. The majority (81%) were aware that DMPA does not protect against STIs and AIDS, though only 46% reported that the CBD agent counseled them about this.

Their reports of the information they received on the main side effects of DMPA shows some differences with the agent reports (see Table 4). While reports on counseling on some of the main side effects such as heavy bleeding, headaches and amenorrhea are similar, there are greater differences in reports on the other side effects. It should be kept in mind, however, that clients may not recall all of the side effects that were discussed with them. Overall, clients reported they were told about an average of 2.6 side effects (with a range of 0-6).

**Table 4: Comparison of CBD agents and client reports on counseling on individual side effects**

Side effect	CBD agents (N= 40, % shown)	Clients (N=244, % shown)
Heavy bleeding	80	81
Headaches	68	55
Spotting	65	18
Amenorrhea	60	54
Irregular bleeding	58	19
Weight gain	28	17
Abdominal discomfort	28	6
Mood swings	25	13

Finally, reports from both agents and clients show that knowledge on provision of reinjections if a client is early or late for her appointment is inadequate. Agents were trained that clients could come for their next injection up to two weeks early and four weeks late without having to rule out pregnancy. In the survey, agents were described four scenarios about providing reinjections

if a client came early (i.e., at 11 weeks) or late (at 12 weeks and five days, 15 weeks, or 17 weeks and 5 days) after her last injection. Of these four questions, only 13% answered them all correctly and nearly one-fifth (18%) did not answer any of them correctly.

Given the agents' lack of knowledge on reinjection criteria, it is not surprising that clients did not have the correct information. Only 9% reported that they could come up to four weeks late while 42% thought they could only come up to one week late. The remainder thought it was two to three weeks late, gave other responses, or said that they did not know. Lack of knowledge on the part of both agents and clients is likely affecting reinjections, and 37% of agents reported that they have had clients who have come too late for a reinjection. Clients were not asked if they knew that they could come early.

## **Client Acceptability and Satisfaction**

Overall the results from agents and clients suggest that family planning in general, DMPA specifically, and DMPA provision by CBD agents are all acceptable to the communities that the agents serve.

Most of the agents (90%) felt that the majority of women they visit were interested in using family planning, though fewer (70%) felt that most men accepted the idea of their partners using a method. All but one agent said it was easy to find women who were interested in receiving DMPA. In terms of provision by the CBD agent, the majority of agents (80%) felt that it was easy to gain the confidence of the community in their ability to provide DMPA; nonetheless, 20% of agents thought it was either very difficult or a little difficult gaining community confidence.

Reports on clients' fertility desires show that these women have a need for family planning and that DMPA is filling this need. More than one-fourth (27%) of the clients did not want another child. The remainder did want more children though their timing varied from wanting another birth in less than two years (14%), to wanting to wait two years or more (45%), to not being sure when they wanted one. As already noted, the availability of DMPA by CBD agents appears to have increased contraceptive use; 39% of the clients reported that their first injection of DMPA was the first time they had ever used a family planning method. Of those clients who had used a method before, 17% had used DMPA from another source while most of the rest (69%) switched from pills. The three main reasons why clients chose to use DMPA were because it is very effective (81%), they only need an injection every three months (63%), and it is easy to use (61%). Most clients reported that their partner knew and supported their use of DMPA (83%); only 2% reported that their partner did not support DMPA use, and the rest did not tell their partner.

Women's experiences with DMPA appear to be positive despite experiences with side effects. A large percent of clients (44%) reported side effects from DMPA; the most common ones reported were amenorrhea (10%), heavy bleeding (15%), and headache (13%). Nonetheless, the side effects did not seem to affect client satisfaction with DMPA, and most of the clients (94%) reported that they were very satisfied with DMPA as a family planning method. Only 1% said

they were not at all satisfied, and the rest were somewhat satisfied. Almost all clients (98%) reported they would recommend to a friend who wanted DMPA to get it from the CBD agent.

Satisfaction with DMPA is further evidenced by the numbers of clients who reported that they opted to receive a second injection. Most clients (94%) received their second injection, and a similar percent plan to have another injection. Of the 17 clients who did not plan to get another injection, the reason by the largest number (six) was they wanted to get pregnant. The other main reasons were side effects and being told by their husband to stop.

Information on DMPA continuation is further illustrated through continuation rates based on the family planning records of the agents. Table 5 shows DMPA continuation for clients who would be able to use DMPA for 12 months, 9 months and 6 months at the time of the evaluation, based on the date when they received their first injection. For comparison purposes, pill continuation is also shown. DMPA continuation is relatively high though not surprisingly, decreases over time with just fewer than two-thirds continuing at 12 months. However, this is higher than the typical one-year continuation rate of about 50% for injectable contraception. Pill continuation is lower at every time period with about half discontinuing at each time point.

**Table 5: Comparison of DMPA and pill continuation rates for clients who could be using these methods at 6, 9 and 12 months at the time of the evaluation (based on data retriever registers)**

Method/continuation	6 months	9 months	12 months
DMPA	At least 2 injections N=695	At least 3 injections N=1,380	At least 4 injections N=430
% continuing	80	71	63
Pills	N=197	N=397	N=208
% continuing	51	55	47

Not all clients returned to the CBD agent for their second injection; 76% received it from the CBD agent, and 24% received it from the clinic provider. The reasons why some returned to the clinic and not an agent were not reported, but according to current MOH guidelines, clients were told to go to the clinic for a required evaluation in order to receive their subsequent injection. Thus, many of these women may have gotten their second injection at the clinic for that reason. There does not appear to be any dissatisfaction with receiving the injection from the agent, as 99% of those who plan to have another injection said that they would like to receive it from their CBD agent.

The CBD agents confirmed that they feel that clients are generally satisfied with DMPA and provision by a CBD agent. Just under half of agents (45%) have heard comments in the community about CBD provision of DMPA. The comments were generally positive as cited by 12 of the 18 agents who heard comments, with most reporting that people are happy that family planning services are nearer to the communities than the health centers, and that people like DMPA specifically. Only six agents heard negative comments, and some of these suggested that

at least some members of the community had heard rumors about DMPA (such as it causes cancer or that the injection is infected). Only two agents heard comments specifically about CBD provision, and these two comments indicated that there are some who don't feel the CBD agent is skilled enough to provide the injection. Finally, nine agents who had clients eligible for second injections reported that they had at least one client who refused the next injection because she was dissatisfied with DMPA. Only two agents said they had clients who refused the next injection because she preferred to go to the health facility.

## Health Systems

The addition of a new health service can have an impact on multiple aspects of the health system. This study explored the effect of CBD provision of DMPA on systems issues such as workload and supervision, as well as the effect on DMPA stocks.

*Workload.* Overall, agents believe that DMPA provision had an impact on their workload. Prior to beginning DMPA provision, agents were providing pills and condoms. In addition, about half were providing health education. The agents also provided varying other services including malaria treatment kits, nutrition information and mosquito nets. Upon adding DMPA provision to their activities, 90% of the agents said that their workload had increased, and only 2% reported it had decreased.

A number of factors surrounding DMPA provision influence the agents' workloads. For instance, agents spend long hours providing services; most agents (88%) are available at any time to see clients and they report that they spend an average of nearly 21 hours per week (range seven to 40 hours) providing family planning services. Travel to far away clients (cited by 28% of agents) contributes to the long hours. An additional burden is the travel time to the health center. All agents use their bicycle to travel to the health center to receive family planning supplies, and it takes an average of one hour (range 0 to four hours) to reach the center. For just under half (48%) of the agents, it takes between one to four hours to get there. About half report having difficulties making the trip to the health center at different times of the year; flooded roads is the most common problem. Nonetheless, agents go to the health center often; they went an average of 11 times (range four to 40) since they started providing DMPA.

In addition, finding clients for reinjections can add to their workload. While all agents who have provided second injections reported that they have clients who come for their next injections without reminders, most of these agents (82%) also reported that they have had to try to find clients to remind them about their injections. Of the 33 agents who have provided second injections, 57% reported trying to find a client for her next injection, but they could not locate her.

Despite the increased workload most feel positive or at least in the middle about the additional work. Nearly 40% feel good about DMPA provision because it helps women and gains more clients. Some (34%) are not quite as positive but still feel that the hours are acceptable or that the workload is manageable. However, 20% had negative comments such as their workload has

increased, they have too much work, there should be more agents or they should receive pay or something in appreciation of their work. Regardless of how they feel about the increased workload, every agent interviewed said they would like to continue providing DMPA to their clients and all but one said they were very satisfied with the experience; the remaining agent reported s/he was somewhat satisfied.

Similarly, all supervisors reported that there was an impact on their workload when CBD agents started providing DMPA; however, the impact on supervisors was variable. Both ChildFund Zambia supervisors felt that their workload had increased. While three of the DHO supervisors agreed, the remaining nine reported that their workload had actually decreased. Despite the increased workload for some, all supervisors felt that there were benefits to CBD agents providing DMPA. These benefits impact the community, the agents and the health centers. From the community perspective, supervisors cited improvements in access to family planning methods through expanding the choice of methods or increasing contraceptive prevalence in remote areas and/or their district. For the agents, supervisors reported that the agents are learning new skills and increasing their capacity. Finally, with CBD agents providing DMPA, there has been a decrease in the health center work load. All but one of the nine DHO supervisors was completely in favor of training more CBD workers to provide DMPA.

*Training and supervision.* When assuming new responsibilities, sufficient training and supervision and support are needed to ensure quality services. Most of the agents (73%) felt that the training period to provide DMPA was just about right, though just over one-fourth (28%) felt that it was too short. Similarly, most (88%) felt they were fully ready after the training to start providing DMPA to clients, though 10% only felt somewhat ready. However, most supervisors did not agree with this assessment. Only four DHO supervisors felt that the CBD workers were fully prepared to provide DMPA once they had completed their training; the rest of the DHO supervisors and both ChildFund Zambia supervisors felt that the agents were somewhat, but not fully prepared.

Once DMPA provision began, the agents for the most part did not believe they received enough support with their new responsibility; only 37.5% reported receiving this support primarily by a nurse at the health center or a District ChildFund Zambia supervisor. A nurse was generally available to talk to the agents when they visited the health centers, and 70% said one was available all the time, but 15% said a nurse was only available some of the time.

*DMPA stocks.* Most supervisors believe that CBD provision of DMPA appears to have affected the stocks at the health centers. Both ChildFund Zambia supervisors and six of nine DHO supervisors reported that increased demand has impacted DMPA stocks. The agents confirm that obtaining DMPA supplies can be a problem and are not always available. About half (49%) of agents who had clients ready for second injections said that there had been times when they could not provide the next injection because they did not have any DMPA supplies. Furthermore, 30% of agents said when they traveled to the health center, they only received expected supplies some of the time or rarely. The two main suggestions by supervisors for improving the systems for ensuring adequate supply of DMPA are to use the commodity stock tracking management form and to ensure that CBD agents submit their monthly returns on time.

## Intervention Costs and Costs per CYP

Table 6 provides information on the additional costs incurred through the intervention activities in the study, which are relevant to eventual expansion of the service to more areas. The TOT workshop trained a total of 10 trainers; four of them then led the CBD training courses in Luangwa and Mumbwa. The CBD training costs include the total costs of workshops in both districts, each of which trained 20 CBDs for a total of 40. Practicum expenses mainly comprise trainee meal allowances and transport refunds for CBD visits to clinical facilities where the mentoring in injection technique took place. Supervision of CBDs took place in two stages: an intensive initial stage where interactions were more frequent and longer in duration, and a second phase in which supervisors checked in with CBDs during routine site visits. Overall intervention management reflects the cost of the effort of the ChildFund Zambia staff who oversaw all activities related to the intervention. Table 6 does not include costs of planning and design, because these are one-time activities that would not be repeated in scale-up.

**Table 6: Incremental costs of the intervention**

Intervention Activity	ZMK	US\$
Training of trainers (n=10)	23,472,445	5,103
Training of CBDs (n=40)	59,632,873	12,964
Practicum expenses	22,206,408	4,827
Supervision of CBDs	15,337,296	3,334
Overall intervention management	14,805,556	3,219
DMPA commodities	39,708,000	7,853
Total Incremental Cost	175,162,577	37,300

Stakeholders are often most interested in predicting costs of scaling up an intervention and seek guidance in preparing activity budgets for scale-up that are based on the experience gained in the pilot. Adjustments to the costs of pilot activities may be needed to reflect anticipated differences in scale-up, such as number and size of service delivery points, who pays for the resources, and changes in the intervention based on experience gained in the pilot.<sup>7</sup> In the present study, the main differences in scale-up costs will come from the size of training workshops (i.e., is it possible to train more trainers and CBD agents per workshop?), the intensity and duration of the practicum stage of training, and post-training supervision.

Table 7 presents findings on the incremental costs per additional CYP provided during the pilot project. The additional costs of training activities are adjusted to reflect the activity benefit actually used during the one-year observation period in the pilot project. For example, the TOT workshop produced 10 persons capable of training CBDs to provide DMPA, but only four of them participated in the pilot. Therefore, only 40% of those training costs are applicable to the pilot. For both the master training and CBD training activities, the effects of the training would

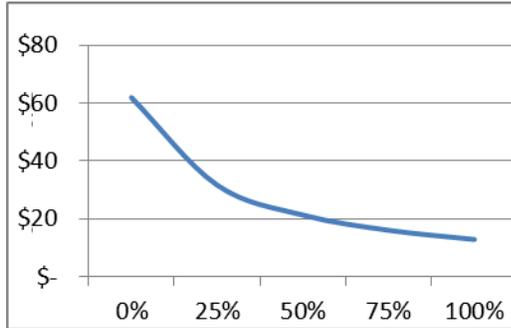
be expected to last more than the one-year observation period in the pilot project. The analysis assumed that the benefits of training would last for two years, and so the calculation applies one-half of the training cost (including practicum expenses) to the one-year time period covered by the pilot program. Other activity costs are unchanged. After making these adjustments, the total additional cost during the pilot period is US\$ 24,332, which is the numerator in calculating the cost per CYP.

**Table 7: Cost per CYP calculation**

<b>Intervention activity</b>	<b>ZMK</b>	<b>US\$</b>
Training of trainers (n=10)	4,694,489	1,021
Training of CBDs (n=40)	29,816,436	6,482
Practicum expenses	11,103,204	2,414
Supervision of CBDs	15,337,296	3,334
Overall intervention management	14,805,556	3,219
DMPA commodities	39,708,000	7,853
Incremental Cost during pilot period	115,464,981	24,322
DMPA CYP provided during pilot		2,206
Cost per CYP		\$11.03
Range of cost per CYP		11.03 - \$61.29

If all injections provided during the pilot study are converted into CYPs, the total is 2,206, and the resulting cost per CYP is US\$11.03 (i.e., \$24,322 divided by 2,206 CYP). But not all CYPs produced during the CBD pilot can be counted as additional outputs. For example, women who already were obtaining DMPA from clinics might have continued obtaining DMPA resupply from clinics in the absence of the CBD intervention. Likewise, women who switched to DMPA (from less effective methods) did increase their protection from pregnancy, but only the marginal increase can be attributed to the intervention. Figure 3 shows the range of cost per CYP under varying assumptions about the CYPs that can definitely be attributed to the CBD intervention. If all DMPA users continued with their method solely because of the improved access afforded by the CBD intervention, then the figure shows that the cost per CYP would be \$11.03. If 50% would have continued using DMPA even without the intervention, then the cost per CYP would rise to \$21.24 because the source of DMPA provision would no longer be just through CBD agents.

**Figure 3: Impact of DMPA continuation on base estimate of cost per CYP**



## Summary and Recommendations

The three main findings of the evaluation of the pilot program are: 1) CBD provision of DMPA is acceptable and expands access to family planning methods, 2) CBD agents can safely provide injectable contraceptives, and 3) CBD provision of DMPA is having an impact on some aspects of the health system. While the results are mostly positive, they also point to some programmatic aspects of the pilot program that need to be strengthened if the program is going to continue and expand.

Survey results from the agents and clients show that communities are accepting DMPA provision by CBD agents and that it is expanding access to family planning. While some women are switching from other contraceptive methods such as pills and condoms to use DMPA, a substantial percent also indicated that they had never used a family planning method before their first DMPA injection from a CBD agent. There appear to be differences in terms of the effect of DMPA on contraceptive use in the two study districts, with Mumbwa showing greater numbers of both new acceptors and switchers to DMPA compared to Luangwa. Furthermore, distribution overall is far higher in Mumbwa, which should not be surprising since contraceptive prevalence is higher in Mumbwa district than Luangwa. These results suggest that some general family planning promotional campaigns may be needed in Luangwa in order to increase demand for methods overall.

For those women using DMPA, they report that they like it for its effectiveness and ease of use and they like CBD provision of it because it is more convenient to go to a CBD agent compared to the health center. Even though many clients experienced side effects, almost all indicated that they are satisfied with using DMPA. The high continuation rates over a 12-month period support the high levels of satisfaction.

While observations during the training phase showed that all agents were adhering to the injection steps, there are suggestions from the survey observations--with agents pretending to give an injection to a piece of fruit--that not all the steps are currently being followed. Some of the steps with the lowest adherence include expelling air from the syringe and washing hands after the procedure. Anecdotal evidence from ChildFund Zambia staff indicates that there have been no abscesses or infections at the injection site in the pilot areas, suggesting that CBD agents

are following proper safety procedures. Nonetheless, these results show that further observations of agents in the field or at the clinics are necessary to find out if in fact there are steps being neglected when injecting clients, and if so, to reinforce the necessary steps. The agents may also benefit from refresher trainings that could be conducted when they return to the clinics for re-supplies. In addition, there appear to be some gaps in terms of counseling of clients. Beyond heavy bleeding, clients do not seem to be fully informed about the other main side effects of DMPA. It is possible that clients were told more than they remembered or reported during the interviews, which suggest a need to reinforce critical information at subsequent visits. Furthermore, both agents and clients need education on how early or late the client can return for reinjections without the need for a pregnancy test.

The addition of DMPA provision to the responsibilities of the CBD agents has implications for other aspects of the health system. Most supervisors and all CBD agents reported that their workload has increased. Finding ways to ease the work load and to allow the agents to function more efficiently are needed. Adding agents could help lighten the load as could making sure needed supplies and support are available at the health centers when the agents come to them so that their time is not wasted. Better information to clients on reinjections could also reduce the amount of time agents need to spend searching for clients to remind them. There are indications that maintaining sufficient stocks of DMPA is a weakness in the health system. It is not clear if this is a systemic problem or due to (or exacerbated by) CBD distribution. Identifying the reasons for stock outs and finding ways to avoid them will help generate greater efficiencies in the system and prevent unintended method discontinuation.

The economic analysis showed that the total additional cost of training and supervising 40 CBD agents through the first year of service delivery was US\$37,300, including the cost of DMPA commodities. This equates to US\$932 per trained CBD agent, but this cost would likely be lower in a scale-up scenario because of potential economies of scale in training and supervision of trained CBDs. The estimated cost per CYP ranges from US\$11.03 under the conservative assumption that no current users of DMPA would have continued accessing DMPA through the clinic, to US\$61.29 assuming that all current users would have returned to the clinic for their re-supplies of DMPA. The true cost per CYP depends on the degree to which DMPA clients of CBD agents continue using CBD agents or go to clinics for reinjection.

An important question is whether this cost represents value for money in the Zambian context. Effective protection against unwanted pregnancy enables the health system and individuals to avoid downstream costs of antenatal care and delivery, as well as PMTCT costs in the case of HIV-infected mothers. A recent study of ANC and PMTCT costs in Zambia found that a complete course of care cost between US\$105 – 120, depending on delivery system, so CBD provision of DMPA would be cost-saving even under the most conservative assumption regarding continuation in the absence of the intervention. Actual cost per CYP is likely lower than the conservative estimate of US\$61.32, and could decline even more if trained CBD agents are able to attract more DMPA acceptors.

## Endnotes

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<sup>5</sup> Kusanthan T. *Evaluation of the Family Planning Integration Project*. Christian Children Fund, November 2008.

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<sup>7</sup> Janowitz, B, Bratt J, Homan R, et al. How much will it cost to scale up a reproductive health pilot project? *FRONTIERS Program Brief*, No. 8. Washington, DC: Population Council, 2007.

