Final Feasibility Evaluation for No-Scalpel Vasectomy in Rwanda

July 2009

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The views expressed in this document do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Acknowledgments

Throughout the process of conducting the assessment and writing of this report, we received invaluable assistance from the following people. We are extremely grateful for their contributions to this report and would like to express our deepest thanks to all. We would like to thank:

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Dr. Caleb King	Medical Doctor, Hospital Director	Shyira Hospital
Dr. Leonard Kagabo	Medical Doctor	Byumba Hospital
Dr. Diocles Mukama	Hospital Director	Byumba Hospital

In addition, we extend our thanks to the potential and former no-scalpel vasectomy clients and community health workers who participated in this evaluation at Kigogo and Rwankeli Health Centers.

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List of Acronyms

CHW	Community Health Worker
DHS	Demographic and Health Survey
FP	Family Planning
MCH	Maternal and Child Health
MOH	Ministry of Health
NSV	No-Scalpel Vasectomy
STI	Sexually Transmitted Infection
USAID	United States Agency for International Development

Executive Summary

Rwanda is a developing country facing massive economic and land constraints due to its burgeoning and young population. In the postgenocide context, issues involving family planning and population control are sensitive for the populations affected. However, Rwanda's continued development is jeopardized by persistent high fertility rates, the highest population density in sub-Saharan Africa and the fact that 42% of the population is under the age of 18. In the face of this, the Government of Rwanda has prioritized reducing the fertility rate under the Health Sector Strategic Plan for the next five years, especially through the use of long-acting and permanent methods. The most recent Demographic and Health Survey showed 38% of women had an unmet need for family planning, with less than 1% of women in Rwanda using surgical sterilization as a primary form of contraception, compared to 16% using other modern methods. Within this context, a deterrent to greater uptake of long-acting and permanent methods is a lack of providers skilled to offer these services, while stigma against long-acting methods is generally high.

To explore the feasibility of renewed vasectomy clinical services and with cooperation and financial support from the Rwanda Ministry of Health, United States Agency for International Development (USAID)'s Office of Population and USAID/Rwanda, the Capacity Project launched a pilot no-scalpel vasectomy (NSV) program in two northern districts in Rwanda (Gicumbi and Nyabihu). The program consisted of four elements: 1) training of doctors in NSV surgical delivery and nurses in complementary counseling techniques; 2) deployment of trained providers at hospitals and health centers; 3) community sensitization and generation of client demand; and 4) development of a data collection system.

The findings in this report complement three other evaluation studies (acceptability and feasibility study, initial training report and client satisfaction survey) that were conducted to evaluate the feasibility of introducing vasectomy clinical services in Rwanda (Kamanzi et al., 2009; Twahirwa, 2008; Koalaga and Twahirwa, 2007). Findings are based on field data collection from June 1-17, 2009 and documentary review of existing reports and external documentation on the program.

Program Description

The Capacity Project selected physicians and nurses in the two districts to receive in-service training on NSV counseling and surgery. Using established methods and guidelines, the Project developed a training regimen and conducted training for the selected providers that included coaching and follow-up phases to ensure quality delivery of service. The Project provided the specialized surgical equipment and supplies to conduct NSV training and services. To ensure sustainability, three physicians and four nurses from the original group selected were trained as trainers and subsequently instructed providers in other districts.

After successfully completing a skills validation, Project-trained vasectomy teams conducted vasectomies at Shyira and Byumba Hospitals. To extend vasectomy service access to the greater population in the context of mountainous terrain with extensive travel times, the Project provided logistical and coordination support for the NSV teams to make periodic trips to selected health centers in the districts to offer vasectomies.

Knowledge about surgical contraception is not widespread among the Rwandan population, with 44% being familiar with vasectomy versus 97% familiar with some other form of modern contraception. For this reason, the Project developed a communications campaign to provide information about and dispel rumors around vasectomy, to be disseminated through partnership with district-level political officials and community health workers. To ensure quality service delivery, the Project also developed a parallel data collection process, using quality indicators developed with USAID.

Results

Since the program's inception in April 2008, six physicians and 16 nurses have been trained and equipped in NSV counseling and delivery, including three physicians and four nurses trained as trainers. In the two pilot districts, there were no providers trained and capable of providing vasectomies; currently there are 12 (four physicians and eight nurses). Throughout the pilot's initial phase, providers experienced long waiting lists for NSV in the areas selected for outreach. Building on cooperation from district officials, a sizeable demand was created in the areas where vasectomy was offered. As of June 30, 2009, Project-trained providers have conducted 390 vasectomies in six districts. A key contribution to the success of the program was the extension of service from the hospitals to the health centers. A sample from one district shows that 56% of the vasectomies performed were done at a health center. Other important factors contributing to the success include strong local government support and involvement of community health workers.

From an almost nonexistent rate of uptake, the Project has shown that there is unmet demand for permanent and long-acting methods of family planning for couples. The experience in Rwanda shows that access problems—either through a lack of trained providers or inability to access the services—may prevent vasectomy uptake as much as stigma and misinformation.

Recommendations

Based on the results of this pilot initiative, expansion of NSV services into other districts of Rwanda is not only feasible, but could greatly aid the achievement of national family planning goals. In order for any expansion to be successful and to guarantee quality service delivery, we recommend the following:

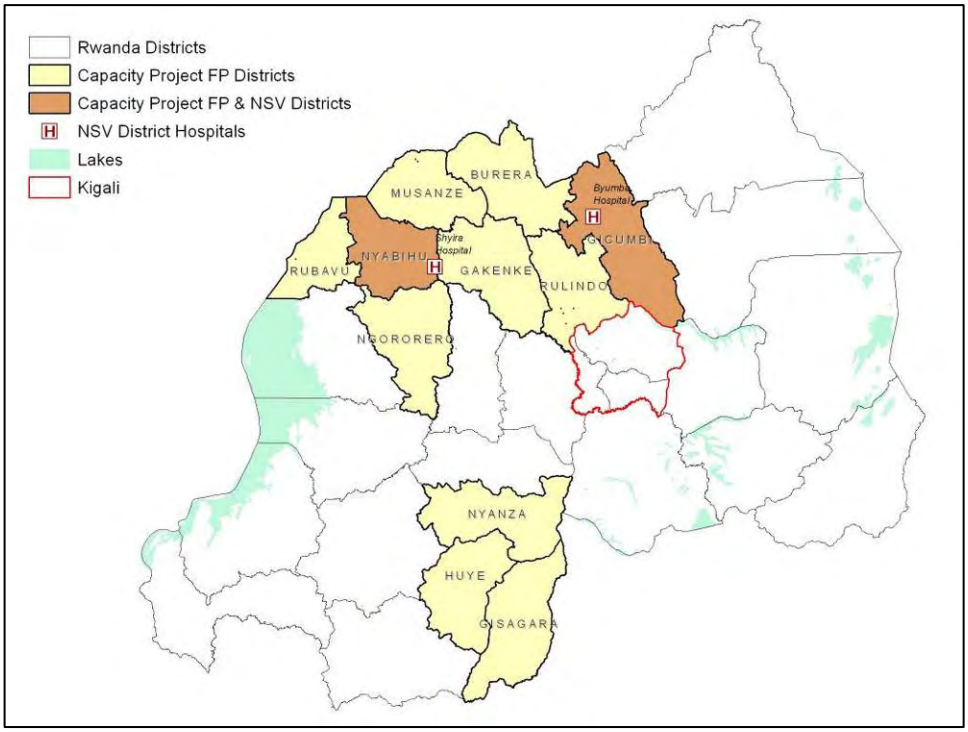
- Continue to develop the workforce through the creation of a cadre of providers to deliver NSV in balance with a targeted outreach program to respond to demand. Revise and standardize an NSV in-service training curriculum based on the Project's experience and incorporating the lessons learned from the pilot study.
- Ensure continued support of the workforce through collaboration with local stakeholders to create and maintain demand for NSV.
- Remove logistical barriers to NSV uptake by providing the equipment, supplies and financial support to enable surgical teams to make outreach visits to health centers.
- Conduct a nationwide public information campaign to sensitize the population about the benefits of NSV. Reduction of stigma and discrediting of rumors will be a key component of ensuring uptake of NSV by men, and as a result, their increased participation in family planning decisions.

Introduction

Background on the Vasectomy Program

In Rwanda, unmet need for family planning (FP) remains high and a burgeoning population poses problems for the future economic progress of the country. Effective delivery of FP services is limited by a need to build the capacity of district-level health care providers in FP counseling and services, insufficient numbers of trained health personnel as well as a lack of necessary equipment and supplies at district hospitals and health centers. The Capacity Project filled an important gap by improving workforce planning and leadership, enhancing education and training programs for the workforce and strengthening systems to support workforce performance in 11 of the 30 Rwanda districts (see Figure 1). In direct response to the country's human resources for health (HRH) needs and as requested by the Rwanda Ministry of Health (MOH) and the United States Agency for International Development (USAID)/Rwanda, the Project helped to develop the capacity of the district hospital clinical workforce to expand access to a full range of quality FP methods. In this context, the Project developed a pilot vasectomy in-service training program for physicians and nurses at two district hospitals (Gicumbi District, Byumba Hospital; Nyabihu District, Shyira Hospital).

Figure 1: Map of Capacity Project/Rwanda Family Planning Districts and No-Scalpel Vasectomy Program



The Government of Rwanda outlined a strong commitment to FP in the 2005 national FP strategy, whose primary goal is to reduce maternal and child morbidity and mortality so that families and the general population can contribute to national prosperity and development (MOH, 2005). Aside from integration of FP services into voluntary counseling and testing and prevention of mother-to-child transmission services, one of the main goals of the strategy is to

reinforce integration and increase access to a full range of FP methods, including long-acting and permanent methods, at all district hospitals and health centers. The government has also recognized the importance of including men in the FP decision-making process. The 2007-2008 interim Demographic and Health Survey (DHS) showed a noted decline in the fertility rate (from 6.5 to 5.5 children per woman) and the reported ideal number of children (from 4.5 to 3.3) from 2005 (MOH et al., 2009). The gap between the fertility rate and number of children highlights the need to build the capacity of district-level health care providers' skills in FP counseling and services.

In conjunction with Rwanda's MOH and district health offices, the Capacity Project/Rwanda has worked since 2006 to strengthen capacity in FP in 11 districts, and emergency obstetrics and neonatal care and maternal and child health (MCH) services in five districts. These efforts included working to increase male involvement in reproductive health decisions and awareness and acceptance of long-acting and permanent contraceptive methods. As a major component of this human resources and FP program, the Repositioning Family Planning initiative, supported by both USAID Family Planning Repositioning Global Leadership Priority funds as well as USAID/Rwanda, was organized to introduce a new, no-scalpel vasectomy (NSV) program in two districts (Nyabihu and Gicumbi). In these districts, the Project developed a vasectomy in-service training program to support skills development of health providers at two district hospitals—Byumba Hospital (Gicumbi District) and Shyira Hospital (Nyabihu District).

The Role of Vasectomy in Rwanda's Family Planning Program

Vasectomy is one of the safest and most effective methods of contraception (World Health Organization and Center for Communication Programs, 2008; Sokal, 2008). Vasectomy's advantages over female sterilization include lower rates of postoperative complications, shorter recovery time, lower costs and increased involvement of men in reproductive decision-making (Vernon et al., 2007). Still, few African men take advantage of the procedure (see Table 1). Reasons for this low level of uptake have been attributed to cultural and gender norms, misinformation about vasectomy's effect on sexual performance and lack of providers trained in the procedure (Kols and Lande, 2008).

Table 1: Contraceptive Use Among Women Ages 15-49 Married or in Union, 1997-2007

Countries	% Any contraceptive method	% Any modern contraceptive method	% Vasectomy	% Female sterilization
Botswana	44	42	0.2	1.2
Central African Republic	19	11	0.1	0.3
Democratic Republic of Congo	31	4	0.1	0.4
Mauritius	76	41	0.1	8.9
Namibia	44	43	0.8	8.5
Sao Tome and Principe	29	27	0.1	0.4
South Africa	60	60	0.7	14.4
Swaziland	51	48	0.2	5.8
Uganda	24	18	0.1	2.4
Zimbabwe	60	58	0.1	2.0

Source: Kols and Lande, 2008

Vasectomy programs have existed in Rwanda—such as a 1991 AVSC (now EngenderHealth) program (Gold, 1992)—and were relatively popular under the National Office of Population's FP Program. Further acceptance waned after the 1994 war, however, as many families had lost loved ones, and pressure from the Catholic Church influenced both individuals and couples to reject FP (Solo, 2008). In pronatalist cultures, a loss of the ability to procreate has generally been considered a social handicap and cause for stigma.

Prior and up to the Project's introduction of NSV in 2008, uptake of vasectomies (performed using the scalpel method at the district hospital level and above) was nominal. The 2007-2008 interim DHS reported that 0.4% of men and 0.5% of women had used permanent methods (MOH et al., 2009). Knowledge about surgical contraception is also not widespread with only 44% of Rwandans familiar with vasectomy compared to 97% familiar with some form of modern contraception. However, relative to the 2005 DHS, the percentage of respondents who knew about vasectomy had increased, from 34% to 45% for men and 23% to 43% for women (National Institute of Statistics of Rwanda and ORC Macro, 2006; MOH et al., 2009). It has been suggested that the low use of the method is not so much due to resistance from men as to the low status accorded to permanent methods by FP programs (Rakotomanga, 2006). Results of a recent pilot program in Ghana suggest that a greater number of men would chose vasectomy if focused efforts were made to overcome these barriers (Kols and Lande, 2008).

Objective of This Report

As part of the pilot activities, evaluation research examining the feasibility of NSV in Rwanda was structured into four major phases through which implementation and data collection were carried out.

1. *Situational assessment on the acceptability and feasibility of vasectomy in the two districts*. The study revealed that providers in the two districts and at the two training hospital sites were neither trained nor equipped to provide vasectomy services. One physician said that he had focused on vasectomy "maybe for a half of day" during his pre-service education, but that the instruction was theoretical and did not involve a practical demonstration with a patient. The assessment further found that men who did engage in the procedure prior to the Project's NSV program tended to guard this in secrecy for fear of being ostracized as eunuchs. Potential obstacles for adoption of the method by men include: 1) lack of knowledge about vasectomy in general; 2) rumors and misinformation that vasectomy is like castration, or that vasectomy can lead to loss of virility, fatigue or even death; 3) men's perceptions that the health clinic is reserved primarily for MCH and thus is not a place for men (Koalaga and Twahirwa, 2007).
2. *Validation exercise for providers trained in NSV.* Doctors and nurses acquired competency to carry out NSV and performed 29 vasectomies during a five-day practical training. Dr. Hubert Rakotomalala, an external and senior expert on the procedure from Madagascar, conducted the training. Three months later, the Project carried out a one-week validation workshop in the two pilot district hospitals (Twahirwa, 2008).
3. *A vasectomy client satisfaction survey.* A program client satisfaction survey was conducted in 2008—halfway through the program—and showed that despite continued community stigma around the procedure, a sample of clients and their spouses expressed high satisfaction with counseling and services received and had no regrets. Respondents

rated the perceived quality of the intervention as generally high, participated in informed consent, trusted the caregivers and showed adequate knowledge about the vasectomy process, conditions and outcomes. Most of the couples surveyed presented a general understanding of the prevention of sexually transmitted infections (STIs) and confirmed that they were aware of the irreversibility of the method. As part of the Client Satisfaction Survey, NSV nurses interviewed suggested that only one person out of 88 cases they had dealt with had developed a complication, in this case, hematoma[1] (Kamanzi et al., 2009).

This report comprises the completion of the fourth and last major component of this feasibility study, the *final feasibility evaluation and scale-up recommendations* (see Kamanzi et al., 2009; Twahirwa, 2008; Koalaga and Twahirwa, 2007). The goal of this study has been to assess the successes and shortcomings of the program model and document lessons learned in preparation of potential scale-up. The study focuses on three key elements of the program:

- Training of physicians to perform the procedure
- Community mobilization and sensitization efforts to generate demand for vasectomy
- Expanding the delivery of service to the health center level.

Methodology

Data collection for this evaluation was done through field work conducted from June 1-17, 2009 and documentation review.

The study used a semistructured interview tool with open-ended questions in French, English or Kinyarwanda to a sample of 50 study participants in the two program districts (Nyabihu and Gicumbi). Rulindo District, where a second generation of doctors trained by Project-trained physicians were conducting vasectomies, was also included. Of the original cohort trained, three of the physicians and two of the nurses were interviewed. The physicians interviewed were all trained as trainers and participated in the instruction of the second generation of providers. We also interviewed one of the second generation of nurses trained and one physician who was performing traditional scalpel vasectomies for a comparison of methods with the NSV procedure. The study sample is shown in Table 2.

Table 2: Study Sample

Informants	Sample size
Capacity Project/Rwanda staff in Kigali	4
Capacity Project/Rwanda FP/MCH field coordinators in Gicumbi and Nyabihu	2
Capacity Project/Rwanda NSV-trained physicians and nurses at Shyira, Gicumbi and Rutongo District Hospitals	8
District hospital director at Rutongo, Byumba and Shyira Hospitals	3
Vasectomy client couples (husbands and wives)	12

[1] *Hematoma* happens when blood clots around a blood vessel. After a vasectomy, it is possible that a hematoma may develop inside the scrotum, causing it to swell. Occasionally, surgery is needed to treat the blood clot.

Informants	Sample size
Potential clients at Kigogo Health Center	5
Health director, Nyabihu	1
Community health workers in NSV districts	12
FP nurse counselor at Gisenyi Hospital	1
Physician at Gisenyi Hospital who performs scalpel vasectomies	1
Dr. Fidel Ngabo, MCH Task Force, MOH	1
TOTAL	**50**

The informants were consulted through in-depth interviews and five focus groups via a one- to two-hour semistructured interview by a team of two evaluators. With the assistance of the Capacity Project/Rwanda, informants were targeted for participation in the study under the criteria that they were involved as either vasectomy providers, program participants or helped in the implementation of the initiative.

Permission to conduct the interviews was obtained orally using a standardized consent form, and interview data were kept confidential. The interviewers took notes at all interviews; when participants gave consent for recording, audio recordings were also obtained.

Documentary research included consultation of relevant country-level documentation such as:

- Program evaluation documents (Koalaga and Twahirwa, 2007; Twahirwa, 2008; Kamanzi et al., 2009)
- Program monitoring data
- USAID compliance documents
- Service statistics and performance data
- Rwanda MOH policy documents
- Project trip reports
- Vasectomy studies from other countries.

Workforce Planning and Development

NSV Provider Training Process

The initial training consisted of 12 providers, six physicians and six nurses across the two sites (half in each) selected based on their surgical experience[2]. An outside senior clinical vasectomy expert was hired to instruct the group using training materials and methodology based on established procedures (EngenderHealth, 2003; 2007a; 2007b; World Health Organization and Center for Communication Programs, 2008). Senior Capacity Project staff—physicians themselves—developed a checklist to standardize the procedure and assure quality delivery of

[2] We felt that for the initial phase, physicians with surgical experience would have an easier time adapting to the new technique (identifying the interior structures, isolating the vas, etc.) and also be better suited to dealing with any complications that arose as a result of the procedure such as hemorrhage control.

service[3]. The validation checklist was reviewed by an external vasectomy expert and compared with international norms[4].

Of the first generation trained, five of the six physicians and all six nurses achieved competency/proficiency as providers of NSV service delivery and counseling[5]. In the Rwandan context, physicians perform the NSV while the nurses are trained to provide counseling on permanent contraception. Two of the five physicians were given extra cases to perform and after demonstrating proficiency were designated as coaches for the other participants. The NSV trained providers completed 172 vasectomies in the intervening three months and were then subject to a validation exercise carried out by Project clinical staff and the external consultant and based on the Capacity Project checklist.

Three of the physicians and four of the nurses were trained as trainers on NSV. They completed a four-day workshop on instructional methodology. The providers interviewed felt that the training itself was sufficient to give them the skills they needed to present the material and instruct others. This newly formed cadre of NSV trainers went on to train an additional seven physicians and ten nurses in NSV techniques and counseling, and acted as preceptors during the second generation's coaching phase. Project staff validated the skills of the second generation. Two of the three physicians received greater than 75% on their evaluation (average 92%) and passed; the third was unable to achieve 75% and did not pass. All of the nurses passed.

As of June 2009, six of the physicians were validated to perform the procedure without assistance from another professional and all 16 nurses were certified as being qualified to provide counseling. Of the remaining trained physicians, one had left the country and five were still in the process of being validated.

Deployment of Trained Providers at Hospitals and Health Centers

While the trained NSV teams are mostly based at the two target hospitals, the Project in collaboration with the district hospital management selected nine health centers in the two districts to serve as NSV outreach or extension centers where physicians would perform the procedures. Currently in Rwanda, both in- and outpatient surgical services are typically only offered at the hospital level. Although Rwanda is not a large country, the topography is such that even relatively short distances can take a great deal of time to travel, so limiting the supply of services to the hospitals can severely restrict access to the greater population. Starting in July 2008, the Project began providing surgical equipment, logistical and financial support to the vasectomy teams to make trips from the hospital to six health centers (three in Nyabihu and three in Gicumbi) that had been prepared as outreach centers for vasectomy services. They were selected on the basis of high client demand for vasectomies in the surrounding

[3] The checklist judges the providers on 28 steps in the categories of infection control, selection and counseling of clients, the surgical intervention, postprocedure counseling and follow-up. It serves as the algorithm for both the training and the coaching phases.

[4] David C. Sokal, MD, scientist, Family Health International.

[5] Two of the vasectomy-trained physicians from Shyira Hospital (Nyabihu District) were shifted to Ruhengeli Hospital in Musanze District for their postgraduate education in family medicine. A third returned to his home country.

communities (Twahirwa, 2008)[6]. Compensation for outreach teams in the form of per diems was provided in the Project's start-up phase[7]. Unexpected demand at the health centers required the Project to sign subsequent memoranda of understanding with the hospitals, laying out roles and responsibilities for funding of future outreach.

Community Sensitization and Generation of Client Demand

In collaboration with the Rwanda MOH, the Project/Rwanda staff developed a strategy to engage stakeholders in the two target districts, including district-level political officials and community health workers (CHWs). Meetings were held with the district health director, mayors and vice-mayors of the two districts[8]. Specialized information, education and communication materials were developed and distributed to the CHWs. The Project's FP coordinators already in place at the district-level took the lead in orienting sector- and cell-level CHW managers, often with the participation of the health director, on the pilot and the NSV approach.

This level of stakeholder buy-in was invaluable in securing the positive results in Nyabihu District. We heard from clients, CHWs and the FP coordinators that the mayor gave a speech to a large audience where he called upon NSV clients to share their experiences with the audience. Subsequently, Nyabihu was recognized for excellent performance in increasing the uptake of FP. District mayors sign performance contracts with the Rwandan president each year on a wide range of targets, including FP.

To address the general lack of knowledge surrounding vasectomy among men and women, the Project developed sensitization materials for community-level distribution. The Project produced a video of interviews with clients talking about their experience and the positive effects it has had on their lives[9]. The Project also pre-tested and finalized an illustrated flipchart and booklet with ten gender-equitable decision-making messages in Kinyarwanda on several public health topics, including vasectomy.

In Nyabihu District, with Project support, district leaders encouraged the establishment of associations for men who have had a vasectomy by emphasizing to sector executives the benefits of these associations in reducing stigma and increasing demand[10]. With the support of sector executives, clients established 12 vasectomy associations with over 200 participants.

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[6] In addition to providing NSV kits (specialized forceps, hemostats, sutures) the Project purchased surgical tables, lights, portable autoclaves (for sterilization) and all the consumables (gloves, gauze, etc.) for the procedures.
[7] Per diems were calculated in accordance with government standards and norms.
[8] District mayors sign an annual contract with the Rwandan president on a wide range of targets including FP indicators and are given a great deal of flexibility on what means they want to use to accomplish these goals. Also, any and all communication or outreach efforts to the population must be agreed upon by the district-level officials. The Project staff recognized that in order for the program to be effective, they needed to not only secure this permission but also get the officials behind the program. Project staff sought to convince these officials of the benefits of wide-scale adoption of vasectomy on their ability to meet their targets. This process included orienting these officials to the basic mechanics of vasectomy, the benefits of vasectomy versus other methods and convincing them of the importance of community outreach for the success of the program.
[9] They speak about the peace of mind they feel from not worrying about having any more children and how vasectomy has not negatively affected their sexual lives.
[10] Rwanda has a strong tradition of village and cell-level cooperatives for all different kinds of activities. Once the cooperatives can begin to show progress toward their objectives, they are eligible for funding for income generating activities for their members.

Development of a Data Collection System

In addition to stakeholder buy-in, the Project developed a monitoring and data collection process that doubled as a patient screening file. In collaboration with United States-based monitoring and evaluation experts, standard monitoring indicators were developed to be tracked in the pilot phase (see Table 3). Basic demographic data, counseling on the method and informed consent among clients are all recorded in the file as well as an at-a-glance process for tracking follow-up. Further, at the three-month check-up, the client is asked if he/she had a positive or negative experience and the result of the sperm test is recorded.

Table 3: Family Planning/Maternal and Child Health Vasectomy Service Statistics Indicators

1.	Number of service providers having successfully completed training to instruct and counsel vasectomy clients
2.	Number of service providers having successfully completed training to perform vasectomy surgery
3.	Number of vasectomies performed per year by Project-trained providers
4.	Percentage of vasectomy cases observed (from beginning to end of visit, including counseling and discharge instructions) that meet quality standards
5.	Percentage of vasectomy clients that report their vasectomy experience as positive
6.	Number of vasectomy referrals from Project-supported health centers to hospitals per year

Results

Number of Health Providers Trained

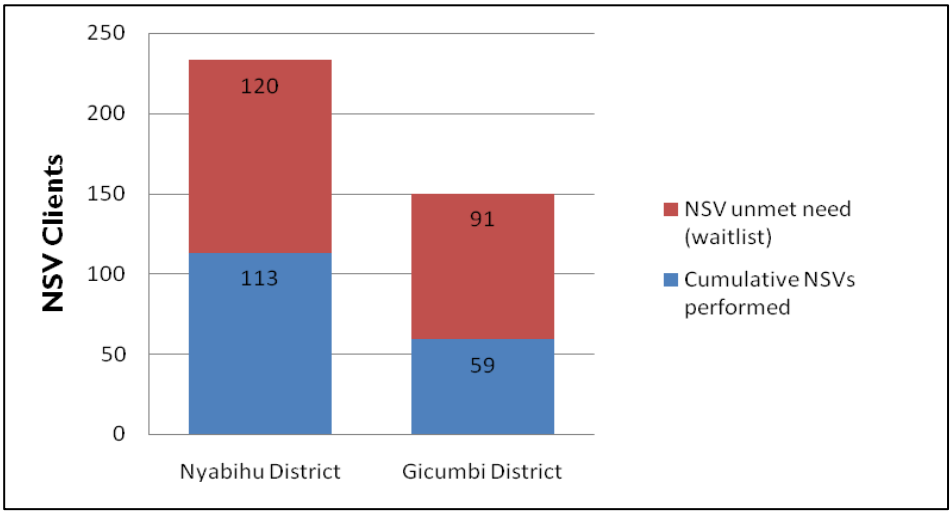
As of June 2009, six of the physicians were validated to perform the procedure without assistance from another professional and all 16 nurses were certified as being qualified to provide counseling. Of the remaining trained physicians, one had left the country and five were still in the process of being validated.

Additionally, the Project organized and supervised refresher training for previously-trained doctors in Ngororero and Rulindo Districts. Using established methods and guidelines, the Project developed a training regime and quality assurance process to deliver NSV services in the two pilot districts (EngenderHealth, 2003). Before the Project started, neither hospital offered NSV services to its clients and none of the providers surveyed were qualified to perform the procedures.

Demand Stimulated for Vasectomy Services

During the first phase of the program (April-September 2008), Project-trained teams experienced waiting lists of clients wishing to have the procedure. In Nyabihu District, Project staff successfully negotiated the hierarchal system of local government for maximum effectiveness. By starting at the top and working down, and involving the district-level officials at every step, they were able to ensure that lower-level functionaries did not need to be convinced of the value of NSV. It was seen as a district initiative that the Project was assisting with. During a sample taken in August 2008, 211 clients were on the waiting list versus 172 clients who had had a vasectomy (see Figure 2).

Figure 2: No-Scalpel Vasectomies Performed and Unmet Need as of August 5, 2008



Number of No-Scalpel Vasectomies Performed

As of June 30, 2009, Project-trained physicians-nurses teams performed 390 vasectomies. Table 4 shows the performance data from January 2008 through June 30, 2009 by quarter, and the total number of vasectomies by quarter is graphed in Figure 3.

Table 4: Performance Data January 2008-March 31, 2009 by Quarter

District	2008				2009		
	Q1	Q2	Q3	Q4	Q1	Q2	Total
Gicumbi	0	21	57	21	2	0	101
Nyabihu	2	21	152	34	8	17	234
Rulindo	1	0	0	0	8	28	37
Huye	0	0	0	3	0	1	4
Gisagara	0	0	0	0	4	3	7
Ngororero	0	0	0	0	3	4	7
Total	3	42	209	58	25	53	390

Figure 3: Total Number of No-Scalpel Vasectomies Conducted Over Six Quarters of the Program

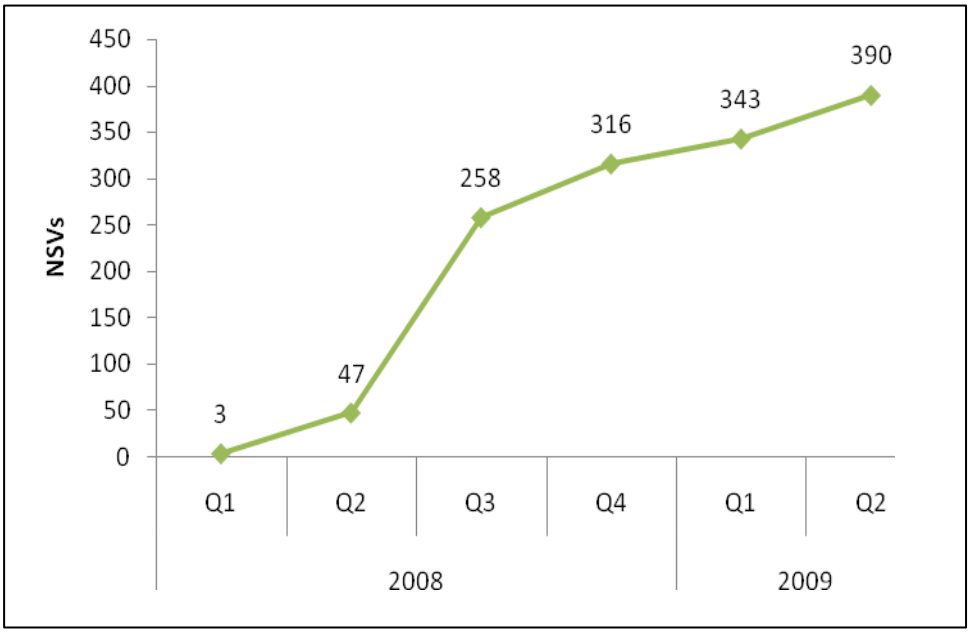


Figure 3 shows that after a rapid ramp-up, the number of vasectomies leveled out in the third quarter of 2008. The initial increase was due to the interest spurred by the sensitization activities and the need for clients to train the first generation of providers. A major contributor to the success of program appears to be the logistical and financial support of the program for providers to work at health centers. After the fourth quarter of 2008, funding for the pilot phase of the program was no longer available and remaining outreach activities had to be covered with USAID/Rwanda field support funds.

Through the end of 2008 and based on Nyabihu data, 56% of the vasectomies performed by Project-trained physicians were done at health centers. This indicates that the strategy of sending NSV teams to the health centers removed a serious logistical barrier to participation[11]. Given the travel times between some of the health centers and the hospitals in the districts, the logistical support to the teams conducting outreach visits was an essential part of the success of these interventions.

Increased Male Involvement in FP

In addition to motivating healthy men to travel to a health facility to undergo an elective surgical procedure, the community sensitization process resulted in men taking a more active role and interest in broader FP. After the initial stimulation of demand for vasectomy by the Project, the subsequent demand appears partly a community-driven phenomenon. Initially, many potential clients feared they would be castrated or made impotent. With modest assistance from the Project, NSV clients formed support cooperatives with income-generating activities and with the goal of stigma reduction and dispelling of rumors. Ninety-four percent of the sample

[11] Many potential clients do not live within easy walking distance of a hospital, such that the financial and opportunity costs involved in getting an NSV remain a very real constraint, especially as both husband and wife must be present at the time of the procedure to sign the consent form.

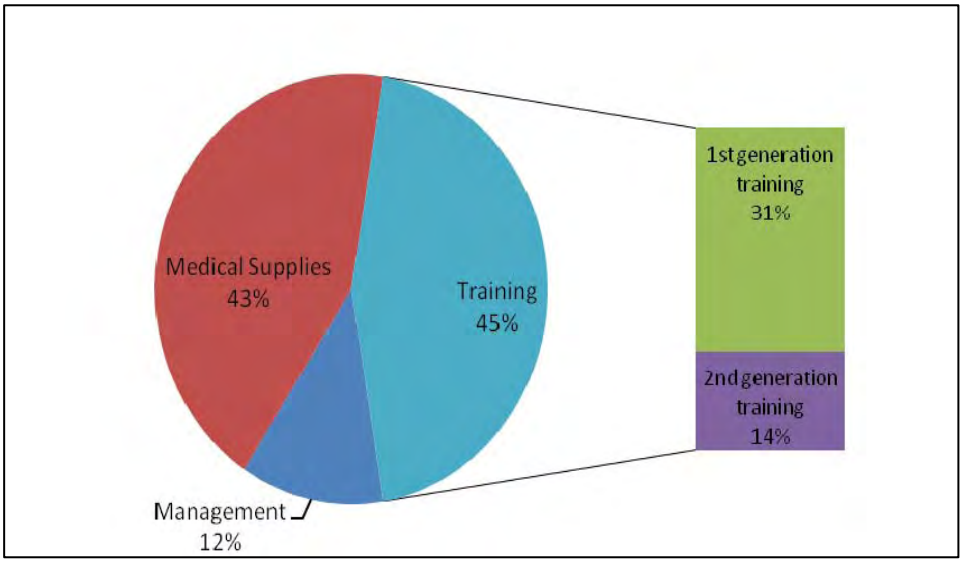
surveyed stated a willingness to help sensitize the community toward vasectomy through face-to-face advocacy and media channels (Kamanzi et al., 2009). Several clients volunteered for video testimonials that became part of a Project-produced DVD to be used as part of information, education and communication/sensitization campaigns.

The associations of vasectomy clients appear to have formed a critical part of the sensitization and destigmatizing process. As Rwanda is a rural but densely populated area, the negative effect of rumors can be strong. As one hospital director put it, "it only takes one case [with a bad outcome] to ruin the whole program." When local people come forward with stories of positive experiences with vasectomy, it goes a long way toward dispelling rumors and misconceptions in the community.

Cost of Capacity-Building

Through June 30, 2009, Project-trained providers performed 390 NSVs in seven districts. The total project development and implementation cost was nearly $105,000, including staff time, curriculum development, medical and training supplies and surgical equipment for facilities and mobile teams. Cost per health worker (physician or nurse) trained on average was $4,780, and per vasectomy performed the cost was $270. These costs are a slightly below the average cost of $5,000-$7,000 of sending a physician to be trained in other countries (Vernon et al., 2007). Figure 4 shows the breakdown by program component. Provider training accounted for 45% of the program cost, but training of the initial six physicians and six nurses (including the cost of bringing in an outside expert) was responsible for two-thirds of this. The cost of training additional cohorts of NSV providers is expected to be much less.

Figure 4: No-Scalpel Vasectomy Program Cost Breakdown



Conclusion

The 2007-2008 interim DHS showed an almost nonexistent rate of vasectomy uptake in Rwanda, with only 44% of people even being familiar with the procedure. In the two pilot

districts where vasectomy was offered in combination with a concerted community outreach campaign and mobile outreach service to a selection of health centers, the Project has shown that demand exists for vasectomy services, which exceeds the current supply as shown by waiting lists in these areas. In a 15-month period, Project-trained teams performed counseling and surgical services for nearly 400 clients using a sustainable approach that builds in-country training capacity.

A comment heard several times in the course of the evaluation in different forms was the idea that it does not serve anyone to create the demand for vasectomy services without a concomitant supply of trained providers offering the procedure. Generating the demand for service in balance with the training of providers for the same area is a crucial component to any scale-up strategy.

Foremost among the challenges for building a successful nationwide NSV program will be generating and maintaining a consistent demand for vasectomies in concert with the training of the providers to satisfy this demand. While the challenges the Project faced in this regard were related to diminishing funding, the expansion of the NSV-trained cadre into other districts showed that demand in regions where the sensitization campaign had not been as widespread continued, albeit at a lower level.

The results of this program suggest that assumptions about the negative influence of community stigma and misinformation regarding vasectomy might need to be reconsidered. The large number of NSVs conducted when the service was extended to the health centers shows that logistical support to outreach teams and the consideration of opportunity costs of interested men are potentially more significant than stigmatization.

This study has shown that there is an active role for men in FP decisions and that achieving acceptance of vasectomy as a form of FP is both realistic and attainable. In reintroducing NSVs to the country, the program has not only increased contraceptive options, but more importantly, engendered favorable attitude and behavior changes in the use of permanent contraception and male involvement in FP. As the program has focused on a training-of-trainers model, provided equipment and organized a monitoring and evaluation system for tracking patients, the initial structure for sustainability exists and can be further capitalized upon with continuing operational cooperation and support from the district and national officials.

Recommendations

Based on this evaluation study, we make the following recommendations:

- **Workforce development:**
    - Revise and formalize the provider training methodology for expansion of service in Rwanda. Counseling modules need to stress dual protection, working with people living with HIV/AIDS and the risk of failure of the procedure after three months.

- Explore ways to shorten the theoretical training potentially through provision of written pre-training materials providing an overview of FP methods, so that the face-to-face training can focus on NSV and skill practice.

- **Workforce support:**
  - Ensure that the NSV providers already on the ground have a sufficient caseload to practice, refine and maintain their skills. The experts consulted all said that upkeep of skills, especially facial interposition, was necessary to ensure long-term quality outcomes.

- **NSV demand:**
  - Leverage currently available resources to develop cost-effective public campaigns for dissemination of messages that will address vasectomy-related stigma and discrimination among the general public.
  - Reduce barriers to convenience by ensuring that the physical space and counseling environment is appropriate for male clients.
  - Based on the success and influence of the current group of client associations, encourage formation and membership in vasectomy associations for NSV clients. Expanding the participation in associations by pushing membership to the cell-level should be encouraged.
  - Facilitate vasectomy promotion and logistics by scheduling vasectomy programs based on holidays or local considerations. Some countries, such as India, Nepal and Thailand, have scheduled annual programs based on local agricultural considerations, climatic factors or certain festivals (e.g., the king's birthday in Thailand).

- **Sustainability:**
  - Work with the Rwandan health insurance—*mutuelles*—to fund client travel reimbursement for vasectomy and tubal ligation.
  - In the case of an outreach service by a mobile team, ensure that provider logistical support in the form of per diem, fuel and vehicle availability is included in the district budget for delivery of vasectomy services.
  - Explore alternative forms for funding of extension service—for example, a per-client compensation paid directly to the hospital or a global budget arrangement tied to certain vasectomy targets for the district that would be part of the government-sponsored performance-based financing system.

- **Data collection:**
  - Improve monitoring and evaluation systems for vasectomy delivery. The system to collect, aggregate and analyze demographic and clinical NSV client information should be strengthened to ensure that clients can be located if they miss their three month follow-up visit, to systematically track unmet need and to develop target

outreach campaigns. This includes thorough documentation of the reasons why clients decline vasectomies after counseling.

  - Add indicators for type of vasectomy, client satisfaction and results of sperm test to the national-level health management information system indicators currently collected by health providers.

- **Technical issues:**
  - Vasectomy techniques that include cautery seem to provide better effectiveness. Low-cost thermal cautery devices powered by two AA batteries can be suitable for use in low-resource settings. Consideration should be given to training and use of such devices in plans for future scale-up activities (Sokal et al., 2004).
  - No matter what technique is used, counseling should always include a statement that pregnancies can occur after vasectomy because the man's body can heal itself through recanalization.

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Annex A: Service Map and Client Flow

An NSV service map is shown below. Using this guide, we will discuss the client flow in two parts, including client screening, counseling and service delivery and follow-up.

Client screening, counseling and service delivery
When a client arrives at a health center to receive any services, he/she automatically receive counseling on FP as a part of the integration of services at the health center level[12]. If a man and his spouse are interested in NSV, they are sent to the NSV nurse/counselor at either a health center or hospital. The nurse counselor conducts the initial counseling, informed consent and screening, and collects basic demographic and medical history data, including HIV status. Collection of HIV status could potentially result in physicians not wanting to perform the procedure, though no evidence of this has been witnessed or reported. Being HIV-positive is not a contraindication to getting a vasectomy and 15% of the clients thus far were HIV-positive.

The counseling emphasizes the permanence of the method, alternative FP options, the need to continue using another form of FP until after the first check-up and that vasectomy has no effect on the ability to receive or transmit STIs. One issue that came up often in discussions with informants is concern by women that their husbands might be more likely to engage in extramarital relations and be more lax about taking protective measures against STIs including HIV/AIDS once the risk of unwanted pregnancies is lifted. The importance for married couples of using condoms (or another contraceptive method) as pregnancy prevention has been incorporated into the provider training. Both health providers and clients alike recognize that the procedure serves to preclude pregnancy, but is not an effective means to prevent STIs. To what degree this awareness translates into preventive action was difficult to deduce from informant interviews.

Providing there are no abnormalities and the client is still in agreement, the counselor reviews the informed consent procedure with the client. The permanent nature of vasectomy requires that the client be fully informed about all aspects of the procedure before accepting it. Both the client and his partner/spouse must sign a consent form that is witnessed by the physician and nurse/counselor immediately before the procedure. One concern raised is that the need for spousal concurrence could be a possible barrier to uptake[13].

Staff interviewed stated that no clients had opted out of the service upon receiving the counseling, which was backed up by the service statistics, though some were deemed ineligible because of medical reasons. This high rate of acceptance is probably due to the clients being highly informed before arriving by either CHWs, past clients or district officials. As the program expands, providers can expect more "walk-in" clients that are not as well informed, thus comprehensive counseling should continue to be part of the routine procedure. If the client agrees, and he and his wife sign the informed consent document, the procedure is performed with the nurse/counselor assisting the physician. After the procedure, the physician records the

[12] Potential vasectomy clients also received sensitization and information before coming in for counseling on vasectomy from a CHW or at a community meeting.
[13] It is not clear whether the norm in Rwanda is to secure concurrence of both partners with other long-acting methods or with female sterilization.

outcome of the procedure and whether there were any complications. The client is observed for 30 minutes after the procedure for immediate postoperative complications. However, with vasectomy, problems might not appear for several days. If the client were to experience problems a few days after the procedure, and when the physician was no longer at the health center, he could report to the health center with his symptoms and then receive an ambulance transfer to the hospital.

Client follow-up

For vasectomy, the follow-up period is critical. While vasectomy is highly effective, failure does occur[14]. Vasectomy clients in Rwanda are given a follow-up appointment three months after the procedure during which time they are told that they must continue using another form of contraception or risk pregnancy. When the client returns for follow-up, a test is performed to look for motile sperm. If small numbers of nonmotile sperm are present, the vasectomy is probably a success. If motile sperm are present, that usually indicates that a recanalization has occurred. Many recanalizations scar shut spontaneously over the course of several months, so additional testing three months later may demonstrate success. Centers in high-resource settings commonly conduct monthly testing until no sperm are seen. If motile sperm persist as long as six to nine months, most surgeons recommend a repeat vasectomy, though a few will wait as long as 12 months if the man is agreeable.

One of the problems frequently cited in field interviews was the low percentage of clients complying with the postsurgical laboratory analysis to confirm that their semen was indeed sperm free. A sample from the data shows a follow-up rate of 32%, which makes it difficult to extrapolate about the success or failure of the NSV. A vasectomy is defined as a failure if the man impregnates a woman three months or more after the procedure, but a positive sperm test within that time frame is not necessarily considered a failure. A sample from the data at the end of the project suggests a 4% failure rate based on lab results, which may not be optimal, but is common when noncautery methods of vas occlusion are used (Sokal, 2008). Providers responded that the low rate of follow-up semen analysis testing was a concern to them.

The CHWs interviewed mentioned lack of time, communication and travel resources as barriers to follow-up with clients to remind and convince the client to come back for the sperm test[15]. In Gicumbi District, it appeared that all NSV clients were being referred to the hospital for sperm tests, which is a serious logistical impediment to follow-up. Currently in Rwanda, there is increased pressure on CHWs to deliver more and more services and as a consequence, there are many demands on their time. The CHWs also stated that their competing responsibilities and lack of resources (communication, transport) made client follow-up difficult. Nyabihu District sets aside 1,000,000 francs a year for CHW communication and transportation costs, but both groups we spoke to said that having resources for communicating for in-house visits and follow-up was a constant problem.

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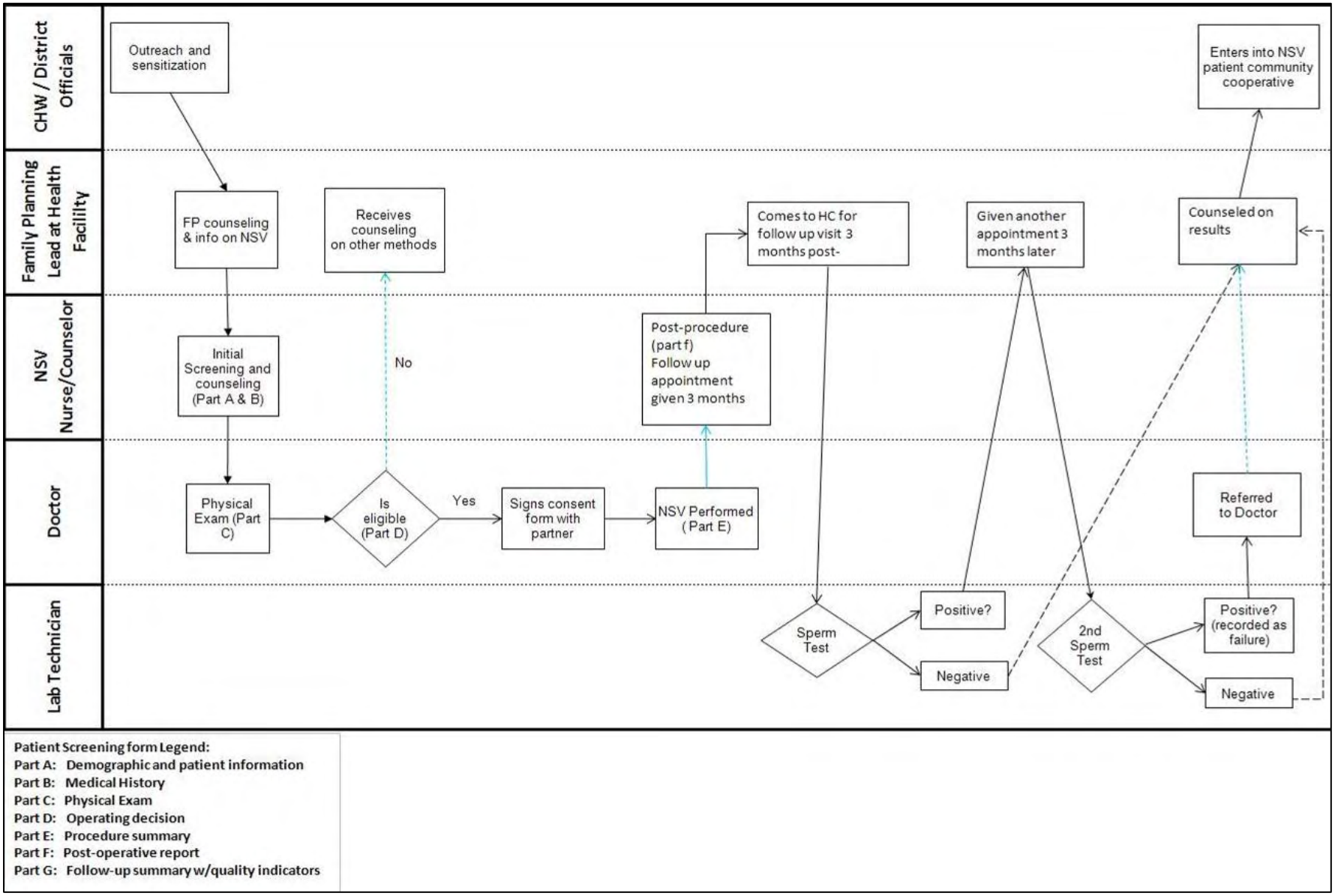
[14] Recanalization (where the two ends of the vas spontaneously reattach inside the facia) can occur and patients are therefore tested for the presence of motile sperm. If motile sperm are seen at 12 weeks or later, that usually indicates that recanalization has occurred. Many recanalizations scar shut between three and six months. Vas occlusion methods that include cautery appear to have lower rates of recanalization (Sokal et al. 2004; Sokal, 2008).

[15] The Capacity Project data collection process records the person's village and the register makes it easy to see when that person has missed the follow-up.

Figure 5: Services Map: No-Scalpel Vasectomy Client Visit Flow



The Capacity Project is an innovative global initiative funded by the United States Agency for International Development (USAID). The Capacity Project applies proven and promising approaches to improve the quality and use of priority health care services in developing countries by:

- Improving workforce planning and leadership
- Developing better education and training programs for the workforce
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