



Division de la Santé de la Reproduction

Taking Postabortion Care Services
Where They Are Needed:
An Operations Research Project Testing
PAC Expansion in Rural Senegal

October 2003

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CONTENTS

List of Tables and Figures	iii
Acronyms/Abbreviations	iv
Acknowledgments	v
Executive Summary	vi
Introduction	1
Background.....	1
Study Aims.....	2
Study Methodology	4
Study Sites.....	4
Study Phases.....	5
Phase I: Preintervention Assessment (December 2000–June 2001).....	5
Phase II: Intervention (July 2001–August 2002).....	6
Phase III: Postintervention Assessment (September 2002–December 2002).....	8
Study Sampling.....	8
Major Findings	9
Characteristics of PAC Clients.....	9
Availability of Integrated Services.....	11
PAC Element #1: Emergency Treatment of Complications of Abortions.....	11
PAC Element #2: Family Planning Counseling and Services.....	13
PAC Element #3: Reproductive Health Counseling and Linkages.....	14
Pain Management.....	15
Client Waiting Time and Hospitalization.....	16
Infection Prevention.....	17
Emergency Preparedness, Safety, and Confidentiality.....	17
Access to PAC Services.....	18
Treatment Costs.....	18
Physical Access to Services.....	19
Conclusions and Recommendations	21
Conclusions.....	21
Recommendations.....	22
References	24

TABLES AND FIGURES

Tables

Table 1: Study sites by region and district	5
Table 2: Socio-demographic characteristics of PAC clients interviewed	9
Table 3: MVA use for PAC treatment.....	12
Table 4: Client waiting times prior to consultation and treatment	16
Table 5: Postintervention PAC treatment costs by site	19

Figures

Figure 1: Map of study regions	4
Figure 2: PAC clinical training participants and trainers from districts of Dioffior, Koungheul, Fatick, Kaffrine, Kasnack, and Gossas (June 25–July 6, 2001).....	6
Figure 3: PAC clinical training of doctors and midwives from health districts of Dioffior, Gossas, Fatick, and Kaffrine (July 16–17, 2001)	6
Figure 4: Providers receiving PAC clinical training	7
Figure 5: Postintervention evaluation team in Kaolack for data collection.....	7
Figure 6: Nature of pregnancy ending in abortion complication.....	10
Figure 7: MVA equipment for use with local anesthesia	11
Figure 8: Trained midwife receiving MVA certification from PAC clinical trainers	11
Figure 9: Percent of PAC clients treated with MVA by region.....	12
Figure 10: Provider perceptions of advantages of PAC treatments.....	13
Figure 11: Quality of PAC counseling	14
Figure 12: Degree of pain experienced during treatment.....	15
Figure 13: Transportation used to get to health facility.....	19
Figure 14: Ambulatory horse cart used to evacuate PAC clients to higher-level health facilities	20

ACRONYMS/ABBREVIATIONS

AIDS	Acquired immunodeficiency syndrome
CEFOREP	Centre de Formation et de Recherche en Santé de Reproduction
CFA	Communauté Financière d'Afrique (African Financial Community) currency unit
CHU	Centre Hospitalier Universitaire (University Hospital Center)
COPE	Client-oriented provider-efficient
D&C	Dilation and curettage
FP	Family planning
HIV	Human immunodeficiency virus
HLD	High-level disinfection
IP	Infection prevention
MOH	Ministry of Health
MVA	Manual vacuum aspiration
OR	Operations research
PAC	Postabortion care
RH	Reproductive health
STI	Sexually transmitted infection
USAID	U.S. Agency for International Development
WHO	World Health Organization

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EXECUTIVE SUMMARY

Social and health indicators for Senegal suggest a low modern contraceptive prevalence (8.1%) and a high unmet need for family planning (33%), both of which contribute to high rates of unintended pregnancy. Many of these unintended pregnancies end in abortion. Additionally, complications from unsafe abortions contribute to the country's high maternal mortality and take a heavy toll on the lives of Senegalese women, particularly in rural areas. According to Ministry of Health (MOH) statistics for 1994 and 1995, the majority of abortion complications, including incomplete abortions, were reported at subregional district-level health sites.

To date, the majority of efforts to expand postabortion care (PAC) services have focused primarily on tertiary-level facilities, mostly urban hospitals. As a result of operations research (OR) demonstrating the impact of an integrated PAC model on quality of care, the MOH proposed to introduce national standards of care for PAC services. Unknown was how these protocols could be applied at lower reference levels (i.e., district health centers and below), particularly outside Dakar, where the majority of PAC cases are not handled by doctors but by mid-level providers who have not traditionally been trained to provide PAC treatment services.

In response to these needs, EngenderHealth, in collaboration with the MOH, conducted an OR project to examine the feasibility of introducing an integrated three-element model of PAC services in secondary- and primary-level sites in two predominantly rural regions in Senegal.

The two-year project was carried out in six districts in the Fatick and Kaolack regions. The study design consisted of three phases: a preintervention assessment and baseline study, an intervention phase, and a postintervention assessment and evaluation. The intervention sought to improve the quality of PAC services, including the management of abortion complications, access to family planning counseling and services, and better linkages to other reproductive health (RH) services. Impact on services was assessed by comparing changes in PAC indicators of quality of care before and after the intervention.

Data were collected using interviews with clients seeking PAC services as well as interviews with health personnel responsible for services. Facility observations and site statistics were also used to assess change. Baseline findings revealed that *before the intervention* few personnel were trained to provide PAC services and that the services that were provided could be described as:

- **Poor in quality:** Digital cureage¹ was the primary method used for PAC treatment. Due to the limited availability of anesthesia services, this method, normally performed under general anesthesia, was provided with little or no pain control at most health centers and some health posts. Clients interviewed at baseline reported a great deal of pain and discomfort during the procedure.

¹ Digital cureage is a method whereby the forefingers are used to manually explore the uterus and evacuate identified contents.

- **Poor in infection prevention (IP) practices:** Knowledge of IP norms and protocols was low. Practices for decontamination, sterilization/high-level disinfection (HLD), waste management, and use of basic universal precautions were often incorrect, inconsistent, or left to untrained personnel.
- **Lacking in integration:** RH counseling and services, including family planning, were not a routine part of PAC services. Clients were rarely counseled about the treatment they received or RH services. They often left the health site without being informed of their immediate risk of pregnancy, what to do in case of complications, how to prevent unwanted pregnancy, or other important information. Clients interested in information or other RH services were generally referred to another part of the health center or to a health post for additional information and services.
- **Costly and inaccessible to clients:** Treatment was often economically and physically inaccessible to clients. Treatment costs, including consultation fees, medications, laboratory tests, and hospitalization, were found to be highly uneven and inconsistently priced across intervention sites. More important, treatment costs were perceived as a major barrier to care by many clients and some providers. Referrals from health posts to higher-level health centers were problematic, given limited coordination and lack of transportation. Unable to refer clients to health centers, untrained health post staff sometimes had little choice but to provide on-site emergency treatment (usually digital curage).

To address these issues, the intervention provided health personnel with: (1) training to improve clinical competence, counseling, infection prevention, and general care; (2) technical assistance, materials, and support to aid in overcoming challenges; and (3) ongoing monitoring and supervision. *Postintervention*, the following changes were noted in PAC services:

- **Improved quality of treatment services:** While digital curage was still being used for treatment, manual vacuum aspiration (MVA) was used during the 14-month period to treat 57% (185/326) of first trimester cases at intervention sites. Local anesthesia was almost always prescribed with MVA, resulting in significantly fewer clients reporting pain during treatment. Newly introduced client medical records facilitated client care and follow-up. Clinicians reported being satisfied with MVA for treatment and recognized its advantages over digital curage.
- **Shorter duration of facility stays:** Overnight stays at health centers were less common, and the mean duration of these stays was significantly reduced from 1.3 to 0.4 days.
- **Enhanced integration of services:** Clients interviewed at postassessment were more than twice as likely to report receiving information on family planning and also more likely to have received information on other RH services. A choice of modern contraceptive methods was also available on-site for clients. As a result, 20% of PAC clients left with a modern contraceptive method; several more left with referrals for follow-up RH services. The majority of clients also reported that their pregnancy had been “wanted,” which suggests that a large number of PAC clients intended to become pregnant within one year.
- **Improved referral network:** Integration within the referral network also resulted in a greater number of clients referred from primary-level health posts to better-equipped secondary-level health posts for treatment and care.

- ***Better infection prevention practices:*** Health personnel were more aware of the benefits of proper IP practices, and efforts were made to adhere to IP protocols.
- ***Strengthened client-provider interaction:*** As a result of improved provider communication skills, clients reported greater satisfaction with services and were more likely to report feeling that the information they received was adequate.

Despite the higher standards of care achieved, deficiencies persisted in the following areas:

- ***Counseling was not systematically offered or sufficiently comprehensive.*** Many clients left the health facility unaware of their immediate risk of pregnancy following a first trimester abortion. Others reported not having received adequate information about their reproductive health concerns. While more equipped to offer confidential counseling services, several sites neglected to protect client confidentiality during care.
- ***Clients experienced delays prior to consultation and treatment,*** mostly because of the limited number of available doctors and midwives trained in MVA. Stock outs in essential and necessary medications, including antibiotics and local anesthesia, also resulted in delays in receiving emergency treatment.
- ***Infection prevention practices were inconsistent*** and still below the national standards of care. This was particularly the case for instrument-processing practices and waste management.
- ***Economic and geographic barriers to access persisted.*** Despite a reduction in the average out-of-pocket costs for PAC clients, treatment costs were still found to be high, particularly for clients treated with MVA. At some sites, MVA costs were more than double the cost of digital curage. Providers and clients alike perceived the high cost of MVA as a major disadvantage of the method. Distance between health posts and health centers, coupled with the lack of access to affordable transportation, remained a major limitation of the referral system.

Notwithstanding these deficiencies, the project demonstrated that quality PAC services could be offered at lower-level health facilities. Project findings attest to the benefits of expanding existing PAC programs in rural settings and suggest that the advantages of such an expansion outweigh the potential disadvantages. Findings also highlight the need for additional research to understand how referral networks could be strengthened to improve access to care and to better define the role of health posts within the referral network. Finally, the research suggests that similar expansion efforts in other regions of the country could have a major impact on improving the quality of services offered in rural settings, ultimately reducing maternal morbidity and mortality.

INTRODUCTION

BACKGROUND

Abortion complications continue to be a major cause of maternal mortality around the world. The World Health Organization (WHO) estimates that complications from abortion are responsible for almost 14% of maternal deaths globally (WHO, 1997). In Sub-Saharan Africa, abortion complications represent an estimated 20 to 50% of maternal morbidity and mortality. They are also one of the major reasons women seek emergency obstetric care (UNICEF, 1997).

Senegal's maternal mortality ratio (1,200 for every 100,000 live births) is one of the highest in the world (Population Reference Bureau, 2002a). Few data are available on causes of maternal mortality nationally; however, the proportion of deaths attributable to complications of abortion is thought to be significant. One study of reasons for emergency obstetric admissions at Centre Hospitalier Universitaire (CHU) Le Dantec in Dakar found that almost one in five clients admitted were for postabortion care (PAC) (CEFOREP and CHU Le Dantec, 1998).

The gap between the low modern contraceptive prevalence (8.1%) and the large need for birth limiting and spacing (33%) (Senegal Demographic Health Survey III, 1998) contributes to large numbers of unintended pregnancies. In addition to poorly timed or unplanned pregnancies, the social sanctions against childbirth outside marriage often cause women to seek abortions. Yet under Senegalese law, abortion is illegal and only permitted to save a woman's life (Population Reference Bureau, 2002b). Research conducted in Senegal also suggests that maternal morbidity is dependent on the availability and quality of health care (L. de Bernis et al., 2000). Thus, in the absence of preventive care (family planning, antenatal care, other), the incidence of miscarriage can be higher.

National reproductive health (RH) service statistics attest to the need for PAC services, particularly in the mostly rural regions outside Dakar. While regional hospitals are responsible for tertiary care and referrals from encompassing health districts, the majority of reported abortion complications are not from regional hospitals but from subregional or district-level facilities, such as health centers and health posts. According to Ministry of Health (MOH) statistics for 1995, 68% (3,643/5,357) of the total abortion cases reported for that year were from district-level sites; only 33% were reported by regional hospitals. The disproportionate volume of cases at the district level was even more apparent in 1994, when 85% of the 5,403 reported cases came from health districts (MOH, 1994, 1995).

Until this project, the majority of efforts to expand PAC services had focused on improving the quality of services in relatively sophisticated urban hospitals, and mostly in Dakar. One example is a 1998 operations research project conducted by the Centre de Formation et de Recherche en Santé de Reproduction (CEFOREP) and CHU Le Dantec teaching hospital, in collaboration with the Population Council and JHPIEGO (CEFOREP and CHU Le Dantec, 1998). The research demonstrated that integrating an expanded PAC model had a significant impact on the quality of

postabortion services. The project introduced an integrated three-element model of PAC that included²

1. Management of abortion complications, including the introduction of manual vacuum aspiration (MVA) for the treatment of incomplete abortion
2. Family planning services and counseling
3. Linkages to other RH services

The 1998 project documented improvements in quality of PAC services offered, including a 51% use of MVA with local anesthesia in lieu of dilation and curettage, a 50% reduction in average treatment costs to clients, improved client-provider interactions, reduced hospital stays, better counseling and referrals, and greater uptake of modern contraception. These findings became a major impetus for developing national PAC standards of care. Consequently, the MOH PAC Working Group was created and charged with adapting the findings into national PAC protocols and norms to be disseminated throughout the country's 11 regions, including subregional districts.

Before finalizing the protocols, however, the MOH was interested in understanding how similar quality PAC services could be provided at secondary (district health center) and primary (health post) levels, where the majority of PAC services were being provided. The MOH also recognized the need to expand access to PAC services by engaging midwives to provide more clinical PAC services, a task traditionally entrusted to doctors. This was particularly important given the recent decentralization of the Senegalese health care system and the disproportionate unmet need in rural settings, where mid-level providers care for the majority of clients.

To address these uncertainties, EngenderHealth (then AVSC International), in collaboration with the MOH, proposed an OR project to examine how PAC services could be expanded to lower-level sites. Funding for the project was provided by the Population Council's Frontiers in Reproductive Health and the David and Lucile Packard Foundation.

STUDY AIMS

The OR project's long-term objective was to reduce the maternal morbidity and mortality due to abortion complications by introducing and testing an intervention that expands PAC services to lower-level health sites within two regions of Senegal.

The intermediate objectives of the project were

- To increase knowledge and improve provider skill in providing PAC services
- To strengthen linkages between emergency treatment of abortion complications and referral to other reproductive health services, including family planning

² In 2002, the PAC Consortium, a group of agencies working on the issue of postabortion care, adapted the original three-element model to include five elements. The essential elements of PAC now consist of community and service provider partnerships, counseling; treatment, contraceptive and family planning services, and reproductive and other health services. See: "Essential elements of postabortion care: an expanded and updated model" (PAC Consortium - September 2002).

- To improve the quality of PAC services at the regional (including district) level.

Specifically, the research component of the project sought to (1) assess the existing type and quality of PAC services offered at the district sites, (2) test an intervention model to improve the quality of existing services at lower-level health sites, and (3) provide recommendations on improving and implementing national PAC protocols.

STUDY METHODOLOGY

STUDY SITES

The research was conducted in the regions of Kaolack and Fatick (Figure 1). Kaolack is one of Senegal's largest regions and consists of four health districts, each with its own health center. Each district health center has oversight of anywhere from seven to 23 health posts. In all, there were 59 health posts in the region.

District health centers evacuate emergency cases requiring specialized care to the Kaolack regional hospital, which serves all four of Kaolack's districts, in addition to all seven districts in Fatick, where, at the start of the study, there was no regional hospital. All of Fatick's health districts have at least one health center and, together, are responsible for a total of 51 mostly rural health posts. In addition, several health posts also have outreach programs with community-based agents offering primary health care services in small villages.

According to national norms, health posts are not equipped to offer treatment services. In abortion complication cases, health posts should stabilize and evacuate PAC clients to the nearest district-level health center or regional hospital for care. In reality, many rural PAC clients do not have the means or access to health centers; thus, untrained health post staff, mostly traditional birth attendants, often found themselves providing emergency treatment services.

The research was conducted in six rural districts in the regions of Kaolack and Fatick (Table 1). Three district health centers and two corresponding health posts were selected as intervention sites from each of the two regions, for a total of 18 sites. Sites were selected by the MOH and EngenderHealth based on a variety of factors, including volume of PAC services, quality of existing services, feasibility of expansion of services, and interest among providers and administrators.

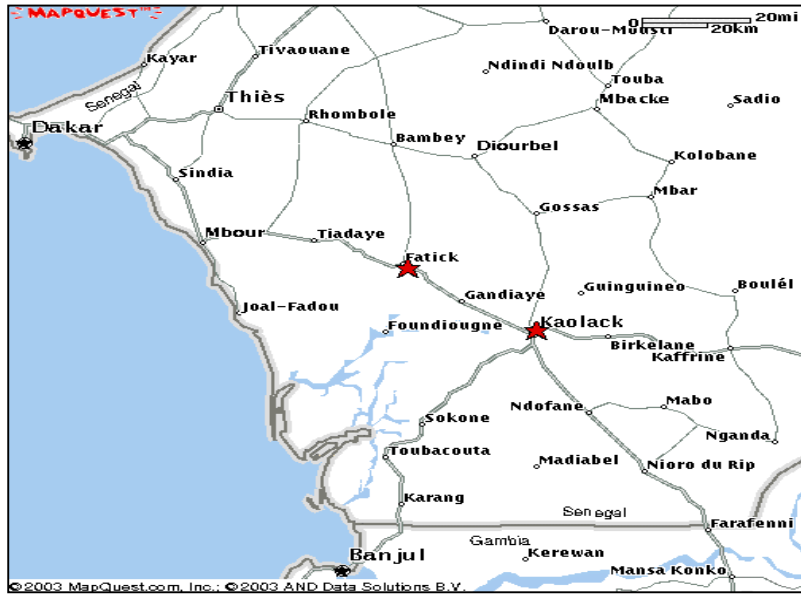


Figure 1: Map of study regions

Table 1: Study sites by region and district

Region	District	District health center	Health posts
Kaolack	Kaolack	Kasnack	Dialegne, Ndoffane
	Kaffrine	Kaffrine	Birkilane, Malem Hoddar
	Kounguel	Koungheul	Saly, Lour
Fatick	Fatick	Fatick	Tataguine, Diakhao
	Dioffior	Dioffior	Samba Dia, Fimela
	Gossass	Gossass	Mbar, Colobane

STUDY PHASES

The OR project was conducted in three phases: a preintervention assessment phase, an intervention phase, and a postintervention assessment and evaluation phase to determine the intervention's impact on quality of care.

Phase I: Preintervention Assessment (December 2000–June 2001)

During this phase, an initial assessment of all health centers and health posts in the two regions was conducted by the MOH and EngenderHealth to select the most appropriate intervention sites. Later, a baseline needs assessment led by CEFOREP was conducted at selected intervention sites to evaluate the quality of PAC services and inform the intervention process. Baseline data were collected between February and April 2000 using the following methods:

- **Provider interviews** to assess knowledge and attitudes about PAC and to learn about issues affecting access and availability of PAC services. All providers offering PAC and family planning services at intervention sites, including doctors, midwives, nurses, traditional birth attendants, and counselors, were interviewed.
- **Client exit interviews** to assess their experiences with PAC services received at health centers, including emergency treatment, counseling, and referrals.
- **Health center assessments** to determine the availability and condition of site resources, including equipment and supplies necessary for providing integrated PAC services. Infection prevention practices were also examined.

Additionally, CEFOREP conducted a series of semi-structured key informant interviews and community focus groups to inform the project design and gauge the level of local support around PAC services.

To introduce the project and leverage additional national and local support for the intervention, baseline findings were disseminated for planning and discussion at a one-day workshop with stakeholders at the end of Phase I.

Phase II: Intervention (July 2001–August 2002)

Baseline findings and formative research results permitted EngenderHealth to design and introduce the intervention model of integrated PAC services. The intervention was based on the three-element model tested in tertiary care sites, the same model adapted for the draft national PAC protocols. This model was slightly adapted to local needs and available resources at district sites. The intervention included PAC clinical and counseling training, PAC counseling workshops, whole-site training for health center personnel in EngenderHealth's client-oriented provider-efficient (COPE) methodology, infection prevention training, contraceptive technology update and counseling workshop, management information systems support, and quarterly supervision visits.

- ***PAC clinical and counseling training***, conducted in June and again in July 2001. A total of 12 district health center clinicians (five doctors and seven midwives) who routinely offered PAC services (mostly digital curage³) received clinical training at CHU Le Dantec in Dakar, including training in MVA techniques and infection prevention. As previously noted, health posts were not equipped to perform MVA per national norms and protocols. Thus, the clinical component of this intervention focused on district health centers. Trained health center providers received MVA certification from EngenderHealth and the MOH. Each district health center was provided with a complete MVA starter kit to begin offering services.



Figure 2: PAC clinical training participants and trainers from districts of Dioffior, Koungeul, Fatick, Kaffrine, Kasnack, and Gossans (June 25–July 6, 2001)

- ***PAC counseling workshops***, which were held at the regional hospital in Kaolack in September 2001 and attended by 36 doctors and mid-level providers from intervention health centers and health posts. Three consultants and three midwives, who had been trained as PAC regional trainers, led the workshop. The training focused on improving the content and quality of



Figure 3: PAC clinical training of doctors and midwives from health districts of Dioffior, Gossass, Fatick, and Kaffrine (July 16–17, 2001)

³ Digital curage is a method whereby the forefingers are used to manually explore the uterus and evacuate identified contents.

counseling information exchanged between PAC providers and their clients.

- **Whole-site training for health center personnel in EngenderHealth's COPE methodology**
COPE is a reproductive health self-assessment tool used for monitoring, evaluating, and improving quality of services (EngenderHealth 2002). COPE invites the staff, the people most knowledgeable about the facility, to evaluate their services objectively, identify problems, and try to develop workable solutions. Using COPE fosters site ownership of both the problems and the solutions. EngenderHealth, as the technical support provider, supported sites in the development and implementation of their COPE action plans. Follow-up was also done at health posts where COPE had already been introduced in 1998 under another EngenderHealth project. Action plans for health posts were reviewed and updated to include steps necessary for integrating PAC services. Action plans and site progress were reviewed during quarterly supervision visits.
- **Infection prevention (IP) training**, conducted with all site staff at each health center over a two-day period. Solutions for identified IP gaps were also included in COPE action plans; site progress was monitored and technical assistance provided during all quarterly supervision visits.
- **Contraceptive technology update and counseling workshop.**
To reinforce family planning knowledge and improve provider competencies in addressing the second element of PAC (the provision of family planning services and referrals), a one-day contraceptive technology update and counseling workshop was conducted with the participation of 10 midwives from the six health centers and one nurse from each of the 12 health posts. Health center and health post providers were jointly trained to facilitate dialogue between sites.
- **Management information systems support.** Prior to the intervention, PAC clients were listed only in maternity registers, and with minimal information. Individual client medical records did not exist for PAC clients. PAC registers and client medical records were introduced to manage PAC client information. Providers and health personnel were also trained in medical record keeping to maintain the newly introduced system.
- **Quarterly supervision visits** to monitor progress and provide technical and material support to intervention sites were conducted by EngenderHealth's medical consultant along with representatives of the MOH. Communication and ongoing



Figure 4: Providers receiving PAC clinical training



Figure 5: Postintervention in Kaolack for data c

technical support were also done by telephone and by additional site visits.

Phase III: Postintervention Assessment (September 2002–December 2002)

To evaluate the intervention's impact on quality of care and respond to the research questions of this project, interviews were conducted with providers at all 18 intervention sites. Trained researchers also conducted client exit interviews at district health centers during a one-month period to assess client experiences with PAC services 14 months after the model's introduction. Additionally, health center registers (both PAC and maternity registers) were reviewed for PAC service statistics for the 14 months prior to and after the intervention's introduction. To assess IP practices, inventory, medical record keeping, etc., EngenderHealth's medical consultant conducted site observations.

STUDY SAMPLING

Providers and clients interviewed during baseline and 14 months postintervention were selected using purposeful sampling. All providers (doctors, midwives, nurses, traditional birth attendants, counselors, etc.) providing PAC services at health centers and health posts were approached for verbal informed consent to participate in the research. Interviews were conducted in either French or Wolof, depending on the provider's preference. A total of 104 providers (ranging from one to 11 per site) were interviewed at baseline. At postintervention assessment, 76 providers (ranging from one to 22 per site) were interviewed. The loss of provider respondents at postintervention assessment was attributable to several provider absences and some transfers. Individual provider preintervention and postintervention responses were not matched; aggregate responses were compared.

Similarly, all clients discharged after receiving PAC services were administered verbal informed consent in Wolof, as documented by interviewers, to determine if they wished to participate in the research. Consenting clients were interviewed at health centers and health posts for baseline; however, given the limited volume of clinical cases presenting at each health post, only health center clients were interviewed at postintervention assessment. For this reason, data presented in this report are based only on client interviews conducted at health center facilities. Client samples from baseline and postintervention assessment were assumed to be independent for the purpose of this research. A total of 48 clients were interviewed at baseline, and 55 were interviewed at postintervention assessment. Additionally, aggregate service statistics were collected on all clients receiving PAC services at health centers between June 2000 and September 2002.

MAJOR FINDINGS

CHARACTERISTICS OF PAC CLIENTS

The mean ages of PAC clients interviewed at health centers were 25.4 for preintervention and 26.5 for postintervention. The youngest client interviewed was 15, and the oldest was 45 years of age. Clients reported beginning childbearing at an average age of 18 (preintervention) and 17.2 (postintervention) and having had an average of 4.5 pregnancies and three living children. Table 2 details a breakdown of client socio-demographic characteristics, including age, ethnicity, religion, and education for both study samples. Data reveal that the vast majority of clients were married monogamously or in a polygamous union. Wolof, Serere, and Pulaar were the most common ethnicities noted for clients in the two study regions, with a higher representation of Pulaar and fewer Serere clients at postintervention. The vast majority of clients were Muslim. Clients were most likely to have had little or no formal education (Koranic or primary school or less) and to not work outside the home.

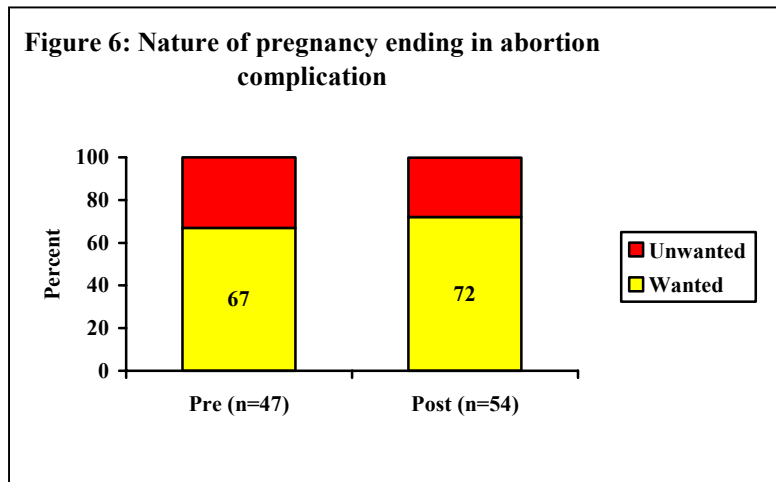
Table 2: Socio-demographic characteristics of PAC clients interviewed

	Preintervention (%) (n=48)	Postintervention (%) (n=55)
Age Group**		
15–24	20 (41.7)	22 (41.5)
25–35	22 (45.8)	18 (34.0)
35 +	6 (12.5)	13 (24.5)
Marital Status*		
Married (monogamous)	25 (52.1)	31 (57.4)
Married (polygamous)	18 (37.5)	22 (40.7)
Single	2 (4.2)	1 (1.9)
Divorced/Separated	3 (6.2)	0 (0.0)
Ethnicity**		
Wolof	17 (35.4)	22 (41.5)
Serere	21 (43.8)	13 (24.5)
Pulaar	5 (10.4)	12 (22.6)
Other	5 (10.4)	6 (11.4)
Religion**		
Muslim	45 (93.7)	52 (98.1)
Catholic	3 (6.3)	1 (1.9)
Education Level**		
No Education	18 (37.5)	17 (32.1)
Primary	14 (29.2)	7 (13.2)
Secondary or Higher	5 (10.4)	7 (13.2)
Koranic/Arabic	10 (20.8)	21 (39.6)
Other	1 (2.1)	1 (1.9)

* n= 1 missing values(post) ** n=2 missing values (post)

When asked about their primary reasons for seeking medical care, clients reported experiencing various symptoms of an incomplete abortion, most notably vaginal bleeding (85% pre and 98% post) and pelvic pain (83% pre and 90% post). Additionally, postintervention clients were more likely to report experiencing symptoms of infection, including fever and chills (49% post compared to 8% pre) and dizziness (40% post compared to 12.5% pre). Client medical records revealed that the vast majority of PAC cases (95%) were recorded as spontaneous abortions. While the number of induced abortion cases is most likely greater than what is documented, under-reporting is not surprising given the illegal status of abortion in Senegal. For most clients, the reference abortion was reported to be their first; however, almost one-third of preintervention and 30% of postintervention clients reported at least one prior abortion or miscarriage.

When asked about the nature of the pregnancy they had just lost, the majority of clients (67% pre, 72% post) reported that it had been a “wanted” pregnancy; less than one in three clients reported that the pregnancy had been “unwanted” (Figure 6). The most common reasons for not wanting the pregnancy were insufficient birth spacing (73% pre, 50% post) and desire to limit births (9% pre, 25% post). This, coupled with the finding that 41% of preintervention clients and 58% of postintervention clients also reported a history of one or more unwanted pregnancy, speaks to the unmet need for family planning among PAC clients. This need was most apparent for the 67% of postintervention and 63% of preintervention clients who reported not wishing to become pregnant again for at least one year.



However, this unmet need for family planning is far from universal. While few preintervention clients stated that they wanted to become pregnant after treatment, almost one in four postintervention clients reported that they wanted to become pregnant shortly after recovery or within one year. Preintervention clients were more likely (23% compared to 7%) to state that the timing of their next pregnancy depended on the “will of God.” This reported desire to become pregnant shortly after treatment is an important finding, particularly given the large number of wanted pregnancies ending as a result of complications. Familial and societal pressures to replace a lost pregnancy were mentioned by some clients during interviews and seem to merit further research.

AVAILABILITY OF INTEGRATED SERVICES

PAC Element #1: Emergency Treatment of Complications of Abortions

Expansion of PAC Services to Include MVA

Treatment: Prior to the introduction of MVA, digital cureage was the primary method used for uterine evacuation. Unlike regional tertiary care facilities that depend on dilation and curettage (D&C) for treatment in the absence of MVA, health centers had come to rely on this low-resource but risky method. As previously mentioned, digital cureage is a method whereby the forefingers are used to manually explore the uterus and evacuate identified contents, clearly introducing great risk of infection. Additionally, it was found that only one out of the six health centers was even equipped to provide general anesthesia, which is generally required for use with digital cureage or with D&C. Even at that one site, digital cureage was the more commonly performed treatment preintervention.



Figure 7: MVA equipment for use with local anesthesia

(photograph courtesy of Ipas: from presentation “Addressing Unsafe Abortion”)

Provider interviews revealed that 68% (71/104) of health personnel had never received any formal training in PAC, including treatment or counseling. Baseline findings also suggested that while only midwives and physicians could perform digital cureage, many untrained providers such as nurses, nurses’ aides, and traditional birth attendants were sometimes also providing the treatment in the common absence of a trained provider in rural regions.

As a result of the intervention, those responsible for providing emergency obstetric care at health centers, including six of nine midwives and all but one doctor, were trained in the management of abortion complications and certified to provide MVA. Additionally, over half (37/73) of the personnel providing PAC counseling (midwives, nurses, traditional birth attendants, and social assistants) reported receiving training in PAC counseling, including family planning and other RH counseling. At least one nurse or traditional birth attendant from each health post had also participated in contraceptive technology updates.



Figure 8: Trained midwife receiving MVA certificate from PAC clinical trainers

PAC statistics collected from maternity and PAC registers showed an overall increase in postintervention PAC cases managed by intervention sites. Between August 2001 and September 2002, 460 clients received PAC at intervention health centers, a 23% increase over the previous 14 months (Table 3). Seventy percent of PAC clients were first trimester cases and thus eligible for treatment with MVA. Of these clients, 57% benefited from treatment with MVA under local anesthesia in lieu of digital cureage or D&C without anesthesia. In the absence of an MVA-trained provider or in cases where the gestational age was greater than 14 weeks, digital cureage

was reported as the method used to treat 52% (237/460) of all PAC clients and almost one-third (103/326) of MVA-eligible cases during the intervention period. D&C was only used to treat four clients, all without anesthesia. In the presence of severe complications, including cases in which the cervix was closed during an incomplete abortion, clients were referred to the regional hospital in Kaolack (10% or 34/326). Aside from severe complications of abortions, the most common reason (10/34) for referrals to the regional hospital were for diagnosis of a molar pregnancy. Of all cases referred, only one client's medical record was found at the regional hospital; thus, treatment received and outcome of referral were not determinable because of gaps in record keeping.

Table 3: MVA use for PAC treatment

	Preintervention June 2000–July 2001	Postintervention August 2001–September 2002
Total PAC clients treated	373	460
Total < 14 weeks gestation*	266	326
% MVA (< 14 wks)	0% (0/266)	57% (185/326)

* Eligible for treatment with MVA

As shown in Figure 9, there were differences noted between the two regions in the speed and degree of integration of MVA into the scope of PAC services. These variations in integrating the method and overcoming challenges to MVA use were most apparent at the site level, but regional differences were also notable. Fatick health centers tended to be slower in the integration of MVA than their counterparts in Kaolack, who were not only quicker but also more consistent in their use of the method.

Clients were most likely to have been treated with MVA in the first nine months after the method was introduced. On average, almost 64% of clients receiving PAC services during this initial period were treated with MVA. The use of MVA declined over the final quarter of the intervention. This decline also coincides with the project's final quarterly supervisory visit (April 2002), but it also falls during a period when many MVA-trained clinicians were absent from their health sites for mandatory participation in national health campaigns.

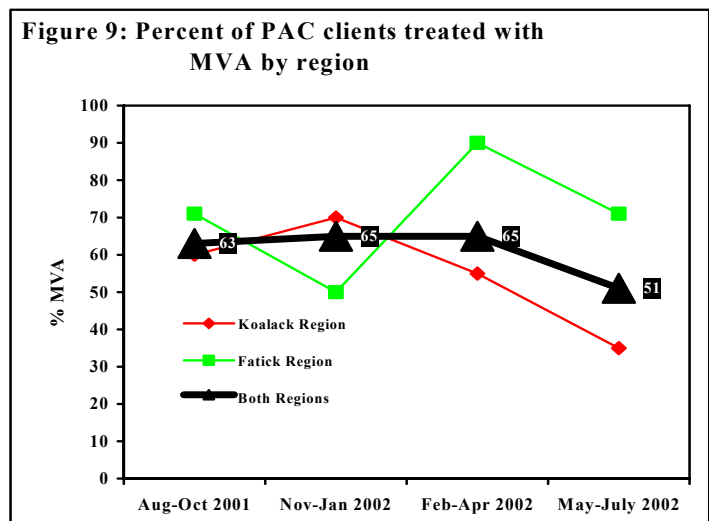
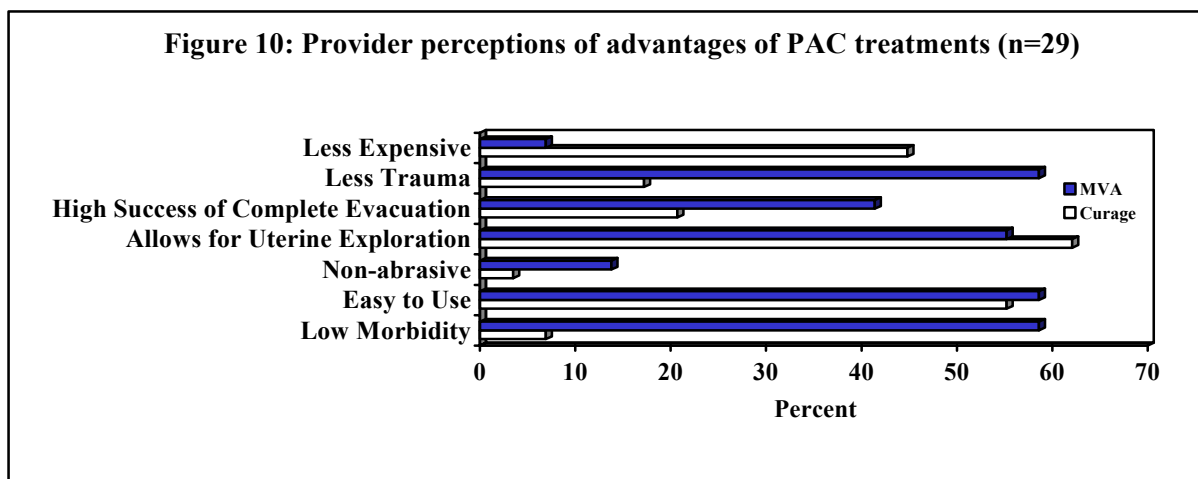


Figure 10: Provider perceptions of advantages of PAC treatments (n=29)

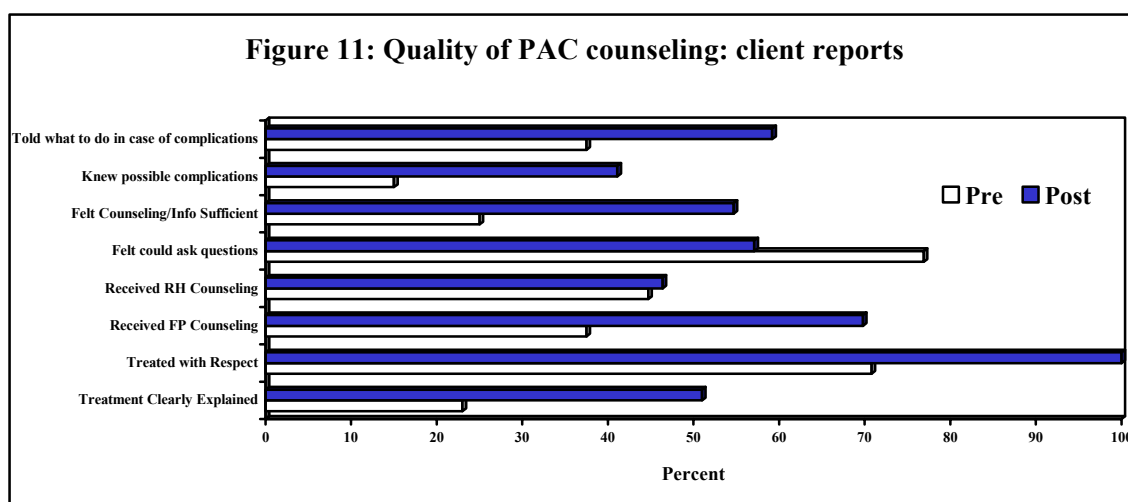


Provider Perceptions of PAC Treatment Techniques: Almost 14 months after training, clinicians offering PAC treatment perceived MVA to have a number of important benefits over digital curage. All clinical providers interviewed at postintervention assessment (n=29) indicated that they were either very satisfied (35%) or satisfied (65%) with MVA. Satisfaction with digital curage was considerably lower; few providers reported strong satisfaction, with 48% stating they were “somewhat satisfied” and 17% stating they were “not satisfied” with digital curage. The less invasive and traumatic nature of MVA, lower associated risk of morbidity, and its higher success rate for complete evacuation were among the most noted advantages of MVA (Figure 10). Both MVA and digital curage were perceived as easy to use; however, the lower cost of digital curage was the main advantage perceived by some providers. Others mentioned the ease of uterine exploration during the treatment using digital curage as an advantage over MVA. Disadvantages of digital curage included the risk of infection (55%), hemorrhaging (55%), mucousal trauma (38%), and its painful nature when performed without general anesthesia (72%). Only a few providers cited perceived risks of MVA, such as hemorrhaging and infection. However, the cost of MVA, its painful nature when performed without local anesthesia, and limited but necessary resources (i.e., MVA training and equipment) for providing the treatment were each cited by one-third or less of clinicians as disadvantages.

PAC Element #2: Family Planning Counseling and Services

The integration of family planning counseling services resulted in increased access to family planning information and informed method choice. Condoms, pills, injectables, and implants were all offered by all health centers. Prior to the intervention, only 38% of PAC clients reported receiving family planning counseling (Figure 11). PAC clients who wished to use a contraceptive method were usually referred to the family planning unit of the same health center or to a health post.

As a result of integration of family planning services, seven in 10 clients interviewed at postintervention assessment benefited from family planning counseling. Health center statistics showed that 20% (84/420) of all PAC clients left the intervention site with a modern contraceptive method. Providers also remarked that registers did not account for many clients



that may have wanted to use a family planning method but needed to consult with their partner or family prior to selection. These clients would most likely have visited the nearest health post or accessed care at the family planning unit of the health center; they were less likely to have returned to the emergency obstetric care section for follow-up, where consultation fees were higher. Additionally, medical records were not integrated across health sites or even within health centers across services. This made tracking postdischarge users of family planning methods almost impossible.

Yet the low level of client awareness of the immediate return of fertility and risk of pregnancy almost immediately after an abortion reveals significant gaps in the postintervention counseling. Only 12% of clients interviewed knew that they ran the risk of becoming pregnant almost immediately after a first trimester abortion; an insignificant change from the 10% documented at baseline. Issues with client confidentiality, particularly during counseling, were also noted at the postintervention assessment at four of the six health centers. While a greater number of clients reported having privacy during examination and treatment (83% compared to 69% at baseline), client confidentiality was not always respected during counseling. Despite efforts to create a facility area where clients could be counseled confidentially for family planning and RH services, postintervention assessment findings revealed that at the majority of health centers, PAC clients were still receiving counseling in hallways and waiting rooms or, not uncommonly, in the presence of other clients.

PAC Element #3: Reproductive Health Counseling and Linkages

In addition to greater access to family planning methods and information, postintervention PAC clients interviewed reported being more informed of available RH services and treatments received. They also reported being more satisfied with the information they received (Figure 11) and feeling that they were treated with respect. Clients were more than twice as likely (51% post compared to 23% pre) to report that the treatment they received was clearly explained to them during postintervention care.

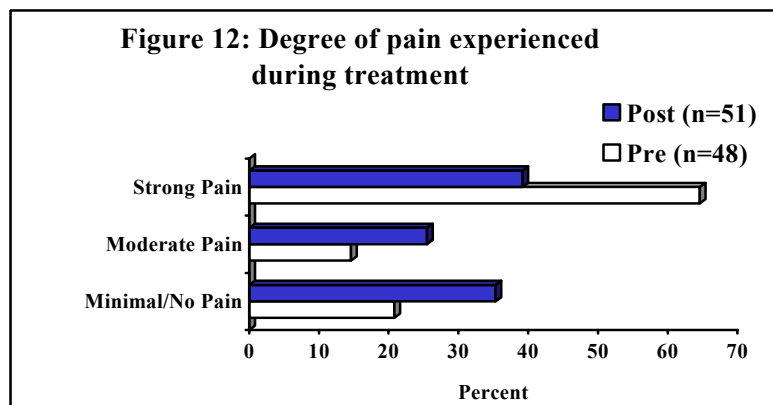
Clients were also much more likely to report having received information about possible complications and what to do in case they experienced any problems after discharge from the health center. Despite fewer clients reporting that they had opportunities to ask questions of their

providers, postintervention assessment clients were still more likely to report that the counseling and information they received was sufficient.

Providers offering PAC services were also responsible for providing a range of other RH services, including antenatal care, infertility services, family planning, sexually transmitted infection (STI) services, vaccinations, and specialty adolescent health services. Almost one in two clients reported receiving RH counseling postintervention, only a slight increase from the 44% who reported so at baseline. In addition to family planning counseling, these clients were counseled in a range of RH issues, including HIV/STI prevention. However, it was also found that most PAC providers were still referring clients for all other non-family planning services, including various screenings, tests, and treatments. Again, such referrals were not possible to track because of the limited integration of information systems.

PAIN MANAGEMENT

Pain management for PAC clients is an important aspect of quality of care. Prior to the introduction of MVA, pain control during uterine evacuation was limited to psychological support and, occasionally, prescribed pain medications after treatment. The overwhelming majority of preintervention PAC clients, including those receiving services at the one site equipped to provide general anesthesia, did not benefit from pretreatment pain control. Baseline data revealed that only 8% of all PAC clients reported receiving medication for pain control prior to treatment; an additional 58% were given pain medication, but only after treatment. As such, 65% of baseline respondents reported feeling “strong pain” during treatment (Figure 12).



As a result of provider training in pain management and the introduction of MVA for use with local anesthesia, clients were much less likely to report feeling pain during treatment. The majority of postintervention assessment clients reported “minimal” or “moderate pain.” Only four in 10 reported feeling “strong pain” during their treatment. Those reporting strong pain were overwhelmingly those treated with digital cureage.

PAC register data also show almost universal prescription of local anesthesia with MVA treatment. Clearly, not all clients would have been able to fill those prescriptions. However, postintervention assessment interviews confirmed that the majority (74%) of clients did benefit from local anesthesia during treatment.

CLIENT WAITING TIME AND HOSPITALIZATION

The emergency nature of PAC services calls for immediate attention from a trained provider to manage any potential complications without delay. This often depends on provider availability, particularly in sites where only a few providers are trained and/or available to offer certain emergency obstetrical services, such as MVA. As Table 4 shows, client waiting time and time prior to evacuation actually increased postintervention. While the majority of both pre- and postintervention clients reported that they were consulted immediately or within 15 minutes of their arrival at the health center, postintervention clients were more likely to report a waiting time longer than the recommended 15 minutes.

Data suggest that while clients treated with MVA benefited from a safer and less painful treatment, they were also more likely to experience delays in receiving care and treatment. Almost all clients who reported having to wait two to 24 hours for uterine evacuation were those treated with MVA. The increased waiting time was usually due to a combination of factors. First, clients treated with MVA were often required to wait for one of the two providers trained in the method, whereas clients treated with digital cureage were more likely to receive immediate treatment from any available provider, including, occasionally, untrained providers. Second, a prescription package, including xylocaine (for local anesthesia), needed to be purchased by MVA clients. Since digital cureage was rarely done under anesthesia, it could be performed more readily than MVA and with fewer precursors to care. Several providers remarked on the delays in PAC services. One provider articulated a solution to this concern, which was also expressed by several of her peers. She stated that there was a need to consider “training more personnel to provide a range of PAC treatment services in order to reduce client waiting times.”

Table 4: Client waiting times prior to consultation and treatment

	Preintervention		Postintervention	
	n=48	%	n=53	%
Time before initial consultation				
Immediate	11	22.9	16	30.2
Within 15 minutes	22	45.8	16	30.2
16 to 30 minutes	9	18.8	7	13.2
Over 30 minutes	6	12.5	14	26.4
Time before uterine evacuation	n=48	%	n=51	%
Immediate	18	37.5	10	19.6
Within 1 hour	21	43.7	17	33.3
1 to 2 hours	5	10.4	10	19.6
Over 2 hours	2	4.2	14	27.5
Didn't recall	2	4.2	0	0

Despite delays in receiving treatment, postintervention PAC clients were less likely to be kept overnight at health facilities. The overall percentage of clients staying overnight at health facilities decreased from 77% at preintervention to 40% at postintervention. Overnight stays

were also more often noted for clients treated with digital curage (almost 50% of clients treated with curage) than for MVA clients (36% of MVA-treated clients). It is important to note that providers also remarked that overnight stays were often necessary in these rural settings because of limited transportation and long distances traveled for care. On the whole, clients benefited from shorter facility stays as a result of the intervention, with mean duration decreasing from 1.3 days to 0.4 days. The postintervention mean was only slightly higher for clients treated with digital curage than for those treated with MVA.

INFECTION PREVENTION

Baseline findings suggested that IP practices would be a major challenge to integrating and expanding PAC services at the health district level. Findings revealed that efforts would be needed not only to equip sites with supplies and IP skills but to impress the importance and benefits of IP practices on all intervention site staff. Many site personnel had never been trained in IP but were found to be responsible for many important IP procedures, such as instrument processing, including high-level disinfection (HLD) and waste disposal.

The baseline assessment revealed that handwashing and use of gloves were highly inconsistent across sites. Decontamination and sterilization/HLD practices were often lacking, or done but not per protocol. Medical waste management and disposal were also problematic issues for most sites, all of which did not have access to a proper incinerator. Prior to the intervention, it was even discovered that some sites were disposing of medical waste and sharps no differently than general waste. At one site, medical waste had been easily accessible to local residents who recovered the used medical supplies, including sharps, for resale in the local market.

During the intervention period, on-site training, COPE exercises, and ongoing supervision were all used to achieve notable improvements in accordance with minimal standards of IP. Despite some continued deficiencies, great progress was made by almost all health centers in this area.

Postintervention, it was noted that providers had made a great effort to improve the quality and consistency of IP practices, especially in areas where they had the capacity to do so (i.e., where external resources were not required). For example, handwashing and use of gloves were much more common, particularly as providers realized the importance of this simple effort in protecting themselves as well as their clients. Supplies for HLD were more readily available and used. Providers and health site personnel were also more knowledgeable of proper infection prevention procedures, including the parameters of HLD and decontamination, albeit with some continued gaps in performance. Waste management efforts were more institutionalized, and almost all sites had built or gained access to a temporary incinerator. Only one health center had succeeded in acquiring a metal incinerator with proper ventilation.

EMERGENCY PREPAREDNESS, SAFETY, AND CONFIDENTIALITY

With few additional resources and many structural and organizational challenges, most health centers succeeded in improving their ability to triage and manage emergency cases. The baseline assessment revealed that many of the facilities faced structural challenges. For example, lighting

was inadequate in most sites, and many did not have separate procedure rooms to provide confidentiality during counseling and treatment. It was also noted and reiterated in all supervisory reports that the one health center receiving the greatest volume of PAC clients was practically in ruins, posing severe safety concerns for clients and staff. Almost all sites were also lacking in necessary emergency medications, equipment, and supplies needed for the immediate management of emergency complications.

During the first few months of the intervention, sites received support from their individual governing health committees to restructure their facilities and create at least one procedure room and a confidential counseling area. Facilities continued using these designated PAC zones; however, it was noted that even postintervention, client confidentiality and comfort were not consistently respected, particularly when sites were presented with multiple emergency obstetric cases all at once.

Lighting and overall cleanliness improved at all sites, as did the availability of certain emergency medications and supplies; however, many sites were still forced to depend on their health center pharmacy for purchasing emergency medications. Despite the Bamako Initiative's (UNICEF 1988) efforts to make essential medications available to populations in need, many of the medications needed for PAC (antibiotics, analgesics, anesthetics, others) were more often than not out of stock at regional and district health facilities. Therefore, clients were often given a prescription for medications that they needed to purchase from the separate health center pharmacy or a local pharmacy prior to receiving emergency treatment. As data suggested, this often resulted in longer waiting times prior to evacuation and translated into greater out-of-pocket costs for clients.

ACCESS TO PAC SERVICES

Treatment Costs

The average treatment costs, including the consultation fee, required laboratory tests, medications, and facility stay, decreased by an average of 1,600 CFA as a result of the intervention. The average cost was reduced from approximately 8,900 CFA (approximately US \$14) to 7,300 CFA (US \$11). This decrease was attributable to several factors, including fewer prescribed medications,⁴ shorter facility stays, and reduced consultation fees for some services.

The cost of PAC services varied greatly by treatment type and by health center, despite EngenderHealth's strong recommendation that governing health committees standardize and decrease PAC treatment costs (Table 5). It appears that in the absence of sufficient regional or national funds for PAC expansion, sites had to recoup some of the costs of expanding PAC services. This resulted in increased treatment costs for some clients, mostly those treated with MVA, but some savings for those treated with digital curage. Postintervention, clients treated with digital curage were on average paying almost half (4,500 CFA) of the preintervention cost for the same treatment. On the other hand, clients receiving MVA treatment were paying an average of 10,100 CFA or approximately US \$15. While this difference is partly due to variation in higher

⁴ It was determined during baseline that many providers were prescribing many costly medications unnecessary for digital curage clients. This list of prescribed essential drugs was streamlined to reduce costs to clients.

consultation fees, it is mostly attributable to higher costs of medications required for treatment with MVA, such as antibiotics and local anesthesia. For some clients, the cost of medications alone was greater than the combined costs of treatment and facility stay.

**Table 5: Postintervention PAC treatment costs* by site
(650 CFA ~ \$1 USD)**

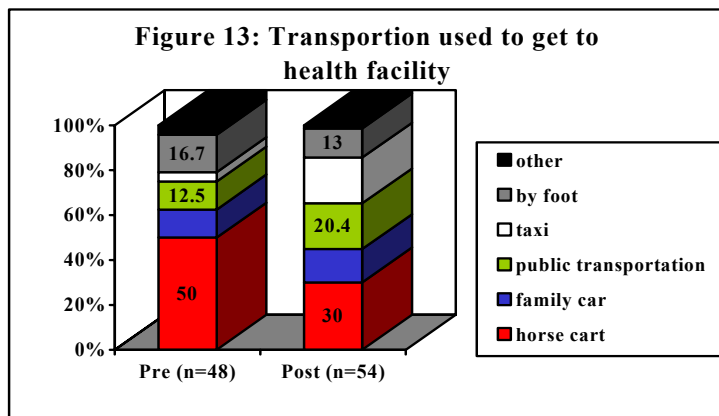
Health center	Digital curage		MVA	
	Consultation fee	Required medications	Consultation fee	Required medications
Fatick	3,000	3,000	3,000	3,000
Gossass	1,500	3,500	1,500	3,500
Dioffior	2,000	2,500	2,000	2,500
Kasnack	3,000	1,500	5,000	5,000
Kaffrine	1,500	3,000	1,500	4,000
Koungheul	1,500	2,000	3,000	5,000

* in CFA

When asked how services could be improved, the majority of clients interviewed at the postintervention assessment mentioned the need to address the burden of high PAC treatment costs. Clients reiterated that “treatment and medications should be given to indigent clients or at least reduced in cost.” As one client articulated the problem, “I find myself in the impossible situation of having to buy all these medications that were prescribed to me. I’ve bought some but the rest I’ll have to wait and see when I can buy them.” Another client stated that the costs of medication were “inaccessible to many” and that “if one does not have the financial means, they risk death.”

Physical Access to Services

Clients and providers cited both the cost of transportation and physical access to services as two of the major barriers to accessing care. While this clinic-based intervention did not directly address transportation resources, it did examine this important aspect of access in order to understand its impact on services. Some efforts were made during the project to encourage health posts and health centers to



increase preparedness for emergency cases by encouraging increased dialogue among sites to better coordinate emergency care and follow-up, including transportation for emergency cases. While the intervention succeeded in more than doubling the number of referrals to health centers

from health posts (31% postintervention compared to 13% at baseline), it could not adequately address barriers to physical access.

Postintervention clients were much more likely to report having used paid public transportation or a taxi to get to the health center for treatment (Figure 13). Although it continued to be the most commonly used method of transportation, fewer (30% compared to 50%) postintervention clients reported using the emergency *charrette*, or horse cart, to get to rural health centers (Figure 14). With more referrals to health centers and during certain periods, availability of the

cart could be quite limited, leaving women little choice other than use of other paid transportation. Depending on distance and road access, for some women, paying for public or private transportation could have been a better and more economical alternative to the cart. In addition to the horse cart being highly uncomfortable for a woman experiencing emergency complications, clients were sometimes expected to pay as much as 10,000 CFA for this transportation service. This cost was sometimes greater than the combined cost of treatment and facility stay.



Figure 14: Ambulatory horse cart used to evacuate PAC clients to higher-level health facilities

During interviews, several clients commented on their frustrations with having to travel so far to access emergency care. They told interviewers that they did not understand why services could not be available to them at closer health posts. “Nurses at health posts should be trained so that clients don’t have to travel so far and deal with all the problems of public transportation.” In the words of another client, “Health posts should be equipped to better handle care.” One solution proposed was to “provide health posts with the necessary medications and supplies and then send a doctor at least two or three times a week.” Clearly, transportation and associated costs were a major challenge for clients seeking care.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Provider commitment, coupled with technical support from EngenderHealth and the MOH, produced meaningful changes in all three elements of the integrated PAC model as a result of the intervention. Findings demonstrate improvements in baseline indicators, which showed poor access to and quality of PAC services, including a lack of integration of services, limited and often painful treatment of abortion complications, limited provider training, and poor counseling and IP.

Improvements were noted in the management of abortion complications and linkages to family planning and other RH information and services. The intervention model of integrated PAC services, including the use of MVA with local anesthesia for treatment, was successfully implemented in all six district health centers. Provider competence and comfort with MVA resulted in the method's use to treat the majority of first trimester abortions. The expansion resulted in better pain management and reduced duration of facility stays.

The project also resulted in greater client access to family planning and other RH counseling, for both on-site services and by referral. Counseling and family planning method availability were more systematic; however, gaps continued to exist. These gaps may explain the lower rate of contraceptive uptake documented (compared to OR findings from PAC expansion conducted at Le Dantec Hospital in Dakar); however, it is also important to consider that a significant proportion of PAC clients reported that their pregnancies had been desired or that they were interested in becoming pregnant within a year.

Improvements in quality of care indicators were also documented. Infection Prevention (IP) knowledge and practices improved as a result of training, COPE exercises, and ongoing supervision. Improvements were noted in all aspects of IP, including handwashing, decontamination, HLD, and medical waste management. Despite improvements, there remained a need for continued improvements that could only be facilitated by ongoing site supervision and procurement of resources and materials, including autoclaves and incinerators for proper IP.

More comprehensive record-keeping systems, including PAC registers and individual client medical records, were institutionalized. Referrals were also reinforced as an important aspect of care; however, the mechanisms for referrals and client follow-up remained difficult without an integrated system to track client care, both within and between health facilities.

Indicators suggest improvements in the quality of client-provider interactions, greater access to care, and higher client satisfaction with services received. Despite progress, deficiencies in the quality of, and access to, PAC services remain to be addressed. For example, while a slight decrease in clients' out-of-pocket cost was documented after the intervention, economic and geographic barriers to care continued to be their major concerns. Counseling was not yet systematic and poor pain control remained a major challenge for those receiving digital curage

without general anesthesia. The limited number of available midwives and physicians trained in MVA also contributed to delays in clients receiving timely treatment and care.

Also important to highlight is the impact of regional ownership of the expansion process. This resulted in both provider accountability and resourcefulness in the face of challenges. Intervention sites were able to overcome a great number of challenges in their efforts to improve PAC services for their clients. Provider buy-in and engagement facilitated the institutionalization of many of the changes mentioned in this report. For this very reason, EngenderHealth was intentional in its role as a catalyst and technical resource in the expansion process, recognizing that sustainability was an important dimension that could only begin to be addressed through early and ongoing engagement of local partners.

RECOMMENDATIONS

To further reinforce the progress made and ensure viability of this effort to decentralize care and decrease the morbidity and mortality associated with abortion complications, several recommendations can be made regarding next steps:

- Train all midwives and physicians providing emergency obstetric services in the integrated PAC model to increase the number of providers equipped to handle postabortion cases in an efficient manner.
- Coordinate regional efforts to provide alternative solutions for addressing the shortages in subsidized essential medications at district facilities.
- Address the cost differences in treatment options as well as differences between fees charged at health facilities. Consider a set regional fee for the service charge for curage and MVA.
- Continue providing refresher training and programmatic technical assistance to address ongoing challenges to improving the standard of PAC, particularly in IP, pain management, counseling, and referrals.
- Introduce national PAC protocols and standards of care as part of RH care services offered at all levels of the health care pyramid.
- Engage decision makers and opinion leaders to advocate for PAC needs at the district, regional, and national level to ensure sustainability, ongoing support, and responsiveness to rural needs.
- Implement information, education, and communication campaigns to inform communities of the availability of services and facilitate access to care.
- Findings also highlight the need to better define and expand the role of health posts. Health posts could greatly benefit from being better equipped to handle emergency cases on site or by a strengthened referral mechanism, particularly given the documented geographic and financial barriers to care.

The scaling-up of PAC expansion efforts suggested in the final recommendation seems inevitable given the large need in rural areas and existing physical and financial barriers to accessing PAC services at district health sites or regional hospitals. Comprehensive client follow-up after discharge from health centers or the regional hospital appears to be challenging because of the current lack of integration and limited communication between sites. Addressing

communication and integration at the multiple levels of the referral pyramid seems to be an essential but missing link. Untrained midwives and traditional birth attendants at health posts reported sometimes providing on-site emergency clinical services, including digital curage, in the absence of means for emergency referral to higher-level sites. Some of these providers are midwives; others are traditional birth attendants with little formal training in PAC. In some instances, midwives from health posts found themselves referring clients to health centers, where they were received and treated by a less qualified provider. In an effort to address these gaps, EngenderHealth will consider piloting a demonstration project in one of the study districts to determine how greater capacity can be created at the health post level, with better coordination and support from health centers.

Despite the need to continue to improve on progress already achieved, the results demonstrate that quality PAC services can be safely and efficiently offered at lower-level health facilities. Operations research findings attest to the benefits of expanding existing PAC programs in rural settings and suggest that advantages of such an expansion outweigh the risks. The research suggests that similar expansion efforts could improve the quality of care available to rural women, ultimately reducing maternal morbidity and mortality in Senegal.

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