PN ACF-298
101708

IMPROVING QUALITY AND LOWERING COSTS IN AN INTEGRATED POSTABORTION CARE MODEL IN PERU

LIMA, PERU

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BACKGROUND AND INTRODUCTION

Treatment of abortion complications, whether resulting from a spontaneous abortion (miscarriage) or unsafely-induced abortion, has been offered by health systems for decades Due primarily to the controversies surrounding abortion, this service has been offered largely in isolation from other reproductive health care Integrating emergency abortion treatment with other reproductive health services is internationally recognized as a critical step to reduction of maternal mortality and morbidity from unsafe abortion

Official documents from both the 1994 International Conference on Population and Development (ICPD) and the 1995 Fourth World Conference on Women (FWCW) state that governments should "provide access to safe motherhood services as part of integrated reproductive health in the context of primary health care Safe motherhood, maternal-child health and family planning programmes should include quality care for obstetric emergencies, including referral services for pregnancy, childbirth and abortion complications family planning counselling, information and services, including post-abortion information and services " (Family Care International, 1995) Among the advantages of integrated care, the FWCW Platform cites improvements in " financial sustainability of reproductive health services by integrating services, such as family planning with maternal-child health " (Family Care International, 1995) However, practical questions about how to integrate emergency abortion treatment with other services such as postabortion family planning, whether services should be offered on site or through referral, client and provider preferences and resource implications of integration are only now beginning to be addressed

Components of integrated postabortion services, such as clinical care and postabortion family planning, have been examined in several locations For example, improvements in clinical practice for treatment of abortion complications were documented in two Egyptian hospitals (Huntington et al , 1995) These included a switch from dilation and curettage (D&C, also called sharp curettage) to vacuum aspiration for treatment of incomplete abortion, a technique demonstrated to be safer and equally effective for uterine evacuation up to 12 weeks uterine size (Greenslade et al , 1993) This change in clinical technique was also accompanied by modifications in pain control protocols, infection prevention practices and information provided to patients (Huntington et al , 1995)

While service delivery interventions in other research have also incorporated changes in clinical care, a study in a Mexican hospital emphasized improved patient satisfaction in such areas as privacy, pain perceptions, medical information provided and postabortion family planning (Langer et al , 1998) Still other studies have concentrated primarily on the addition of postabortion family planning to abortion treatment services, resulting in increased provision of family planning information, improved contraceptive adoption and acceptance of new postabortion family planning services by hospital staff (Díaz et al , 1998, Johnson et al , 1998, Solo et al , 1998, Távara Orozco and Ramírez Jiménez, 1996)

The cost implications of integrated postabortion services are not widely explored and virtually no research has examined the costs of postabortion services to patients A number of studies have documented the resource advantages to the facility of a change from sharp curettage to MVA for treatment of incomplete abortion, along with modifications in the organization of postabortion services (King et al , 1998, Johnson et al , 1998) One investigation in Mexico demonstrated that adding postabortion family planning to abortion treatment services with MVA resulted in savings compared to the original practice of sharp curettage with little family planning offered (Brambila et al , 1998)

The study described in this article was conducted in Peru where, as in almost all countries in Latin America, legal induced abortion is virtually unavailable (Alan Guttmacher Institute, 1994) Nevertheless, Peru has one of the highest induced abortion rates in Latin America, with an estimated annual rate of 51 8 per 1000 women of reproductive age (Singh and Wulf, 1994) Many of these procedures are performed by untrained providers working in unhygienic conditions An estimated 271,000 induced abortions are performed annually, with between 48,000 and 61,000 hospitalizations for treatment of resulting complications When hospitalizations for spontaneous abortion are also included, the estimated total increases to just over 72,000 (Singh and Wulf, 1994)

Up to 60% of pregnancies are classified as unwanted, with about half of these ending in induced abortion (Singh and Wulf, 1994) In study of 1,342 hospitalized Peruvian women classified with induced abortion, 37% acknowledged having had at least one previous abortion (Singh and Wulf, 1993) The high prevalence of ineffective contraceptive methods is a major contributor to Peru's high abortion rate (Singh and Wulf, 1994) The overall contraceptive prevalence rate is 36%, with the most common modern method, the IUD, used by 8% of women, almost 13% of couples rely on the rhythm method (Instituto Nacional de Estadística e Informática, Asociación Benéfica PRISMA and Macro International, 1992) The unmet need for family planning is estimated at 34% (Alan Guttmacher Institute, 1994)

The estimated maternal mortality ratio in Peru is 265 deaths per 100,000 live births, a figure which has not appreciably decreased in the last 25 years (Instituto Nacional de Estadística e Informática and Macro International, 1997, Ministerio de Salud de Peru, 1996)

In Peru, treatment for abortion complications, as in many hospitals in Latin America, is characterized by long patient waits before and after clinical care, use of sharp curettage for treatment of incomplete abortion, inadequate pain management and infection prevention practices, limited information given to women, negative behavior by staff toward patients, and poor linkages to family planning services Even though these services are inadequate, they consume a disproportionate amount of scarce health system resources, including personnel time, medications and costs of overnight stay

A 1992-93 Peruvian study reported an average stay of 3 8 days for women treated for abortion complications in the Instituto Materno-Perinatal and 3 1 days in the Rebagliati Hospital (Li and Ramos, 1994) The resources used for postabortion patients at the Instituto comprised 13% of the total hospital budget Another investigation in a Social Security hospital in the city of Piura found that the average length of stay for treatment of non-infected incomplete abortion was 1 4 days and 4 3 days in cases of septicemia Postabortion admissions represented 46% of gynecological hospitalizations in the facility (Ñañez Aizcorbe, 1991)

To address the problems of high cost and low quality, the Peruvian Ministry of Health requested the assistance of Ipas and the Population Council to develop and test a hospital-based model of integrated postabortion care (PAC) The Ministry's goal was to incorporate the lessons learned from the research into postabortion services at hospitals and health centers throughout the country

This article reports the findings of an operations research project to assess the effects of integration of treatment of abortion complications with postabortion family planning counseling and services Improvements in the quality of patient care through upgrades in existing services and the addition of new services are described, and the resulting implications for costs and resource utilization The study focuses on clinical treatment services, postabortion family planning, information provided to patients, women's pain perceptions, service delivery organization, costs to both the hospital and patient, and potential for long-term sustainability of the integrated model

METHODS

Research was conducted at National Hospital "Daniel Alcides Carrión," a tertiary-level teaching facility that is part of the Ministry of Health service delivery network It is located in the province of Callao, a large urban area adjacent to the capital city of Lima In 1995, the hospital treated 573 women presenting with incomplete abortion resulting either from miscarriage or induced abortions performed outside the hospital

The study utilized a quasi-experimental, pre-post intervention design Baseline data were obtained from August to December 1996 to document the quality and costs of existing postabortion care services in the study hospital Implementation of the integrated PAC training and service delivery intervention began in February 1997 From October to December 1997, follow-up data were collected to document changes in postabortion care services

All data collectors had backgrounds in reproductive health services and/or research and were monitored by an experienced field supervisor Verbal informed consent was obtained from all participants For patient interviews and observations, participant inclusion criteria included women treated for incomplete abortion with no additional presenting complications and whose pregnancies did not exceed 16 weeks of gestation Further details on data collection instruments have been reported elsewhere (Benson and Huapaya, 1997) A brief description of the information sources follows

Patient Exit Interview Brief interviews were conducted at the bedside of women recovering from postabortion treatment prior to their discharge from the hospital The interview consisted of primarily closed questions about the patient's socioeconomic characteristics, reproductive health history, family planning knowledge and use, information received during the hospital stay, pain perceptions during care and other aspects of the quality of services

Clinical History Form A medical history form was completed for each patient interviewed Data included the woman's presenting clinical condition, type of treatment received, complications and related clinical information Most information was obtained from the patient's medical chart and, in those cases with missing data, from the provider who performed the uterine evacuation The medical charts were subsequently reviewed to determine which patients returned to the hospital for family planning services within 30 days of discharge

Cost and Resource Use Component Cost calculations were made utilizing a rapid-assessment approach developed by the Ipas which included direct observation of a small sample of postabortion patients from arrival at the hospital until discharge, along with a review of hospital financial, administrative and personnel records (Abernathy et al , 1993) Average duration of hospital stay, average total costs per postabortion patient, costs of specific stages of the hospital stay, and costs by category (personnel, medications/supplies/equipment and hospitalization) were calculated [1]

For the baseline phase only, a second cost methodology developed by the World Health Organization/Pan-American Health Organization was used (Ministerio de Salud de Peru, 1996) This approach was based on a review of the hospital's financial records [2]

Data collectors also spoke with patients and reviewed cashiers' receipts for information on the amounts of fees paid to the hospital by women and their families

Logbook Review Data on patients' diagnoses, uterine size, evacuation technique and related details were obtained from the surgical area logbook, which is routinely completed by the physician or nurse at the time of the evacuation procedure

In-Depth Interviews with Patients, Providers and Policy-makers *During the* baseline phase only, in-depth, qualitative interviews were administered to 15 patients (not a sub-set of the patient exit interviews) At the conclusion of the study, key hospital decision-makers, working independently as a group, completed a questionnaire to assess the level of hospital support for postabortion care services The leaders ranked each of forty items which had been organized into categories influencing the facility's potential to sustain high-quality postabortion care services with their own resources policies, institutional resources, facility infrastructure, provider competency and socioeconomic context

Data collected for the patient exit interview and clinical history form were entered using Epi-Info 6 0 and converted to SPSS 7 5 for analysis Univariate analyses were conducted to calculate means, standard deviations, ranges and distributions of all variables to assess potential outliers Analysis also included two-tailed Fisher exact tests, two-tailed Pearson Chi-squares (except when otherwise noted) and t-tests for categorical and continuous variables, respectively Microsoft Excel spreadsheets were used for cost and logbook data calculations

Postabortion Care Intervention

Using the baseline findings, project and hospital staff designed an integrated PAC intervention model Twenty-three clinical personnel participated in two training-of-trainers (TOT) courses taught by experienced regional and local trainers, using curriculum developed by Ipas The first course focused on the use of MVA and related activities such as infection prevention, pain management and communication with patients The second training covered postabortion family planning counseling and method provision Recognizing the role of other staff in making changes in service delivery, cashiers, dietary workers, police, and doorkeepers attended a one-day orientation session about the study, where they offered their own perspectives on postabortion services in the hospital as well The trainers periodically returned to the hospital to observe provider practice and offer technical assistance

Participants in the TOT subsequently trained the remainder of the staff involved in PAC services, in particular, the twelve obstetrics-gynecology resident physicians and staff *obstetrices* who offered the majority of patient care [3] New residents arrive each year and because they provide clinical PAC services, it was essential to train these personnel early in their careers in the hospital The baseline data demonstrated that student *obstetrices* interacted with postabortion patients more than any other staff category but that their skill level was not sufficient for adequate counseling and contraceptive method provision Therefore, the hospital designated staff *obstetrices* to carry out these tasks, given their customary roles in family planning and other reproductive health service provision

Prior to implementation of the integrated services, postabortion care was categorized as an inpatient service, requiring admission to the hospital and an overnight stay on the obstetrics-gynecology ward Due to the design of the hospital, postabortion services were dispersed through the facility, requiring transport of patients up stairs, on elevators and through a long tunnel to an adjoining building PAC services with MVA were reorganized as an outpatient service, located in a new obstetrics-gynecology emergency room, which opened in August 1997 Planning for the new emergency room

began prior to the start of the project However, the preliminary baseline data documenting extended patient stays, high costs and sub-standard care prompted hospital administrators and clinicians to push ahead with construction of the new emergency area, with funds provided by the Ministry of Health

In the six-month period between the first training courses and the opening of the new emergency room, the hospital gradually made improvements in PAC services For example, the percentage of women treated for incomplete abortion with MVA increased, staff training and monitoring of services were carried out and new policies for patient fees were operationalized

Except for diagnostic procedures necessary for some patients, such as ultrasound, virtually all postabortion care services are offered in the new emergency room [4] These include administrative processing, medical examination and taking of the clinical history, treatment of incomplete abortion with the MVA technique, post-operative recovery, counseling of patients about their medical condition and follow-up care, provision of family planning information and if desired by the patient, delivery of contraceptive methods

RESULTS

Characteristics of Postabortion Patients

Overall, 221 women were recruited for the patient exit interview and clinical history portions of the study (103 and 118 women for the baseline and follow-up phases, respectively) Of the 103 baseline participants, one woman was excluded from analysis as the gestation of her pregnancy exceeded the admission criteria Sixteen women from the follow-up phase were excluded from analysis because they were treated with sharp curettage ($n=15$) or did not have uterine size estimates recorded on their medical charts ($n=1$) Thus, data from 102 baseline and 102 follow-up participants are reported here

The women interviewed in both phases had similar sociodemographic characteristics (Table 1) On the average, they were in their late 20's, most worked in the home, and most were married or in a consensual union, although more women reported being "single" during follow-up data collection ($p< 05$) Although both groups reported relatively high educational levels, the follow-up group reported had more years of education ($p= 05$)

The reproductive history and goals for the two groups were not significantly different (Table 2) Just over one-third of the women in both groups

reported that their current pregnancy was wanted About one quarter of women from each group did not wish to have any more children, for those women who desired a future pregnancy, few wanted to become pregnant again immediately

Knowledge of family planning methods was almost universal among women in both groups although the pre-intervention patients reported significantly higher levels of ever-use of contraception ($p < 05$) and use at the time of the current pregnancy ($p < 05$) (Table 3) For those women who reported using contraception when they became pregnant, the rhythm method was the most common method choice in both groups

Clinical Care

Sharp curettage was the technique used for evacuation of incomplete abortion for all patients in the pre-intervention MVA was utilized for all women reported on in the post-intervention phase

Figure 1 charts the use of MVA for appropriate patients (12 weeks or less uterine size) from immediately prior to the implementation of the intervention through May 1998, although the study officially concluded in February of that year

For all women in the pre-intervention phase, heavy sedation was the pain control regimen utilized The majority of MVA patients in the post-intervention phase, 74 5%, however, were given either heavy sedation alone or in combination with a paracervical block Almost 71% of women in the baseline phase and 82 4% in the follow-up reported that they were awake during their evacuation procedure ($p < 05$, one-tailed test)

The average uterine size for patients in the baseline phase was 10 2 cm (as measured by bimanual examination) and 9 3 cm in the follow-up group ($p < 05$) Eighty-eight percent of baseline phase patients and all of the follow-up group had a uterine size of 12 cm or less ($p < 05$)

Women were asked about the number of pelvic examinations received during their hospital stay Pre-intervention patients stated they had received, on the average, 2 4 pelvic exams, while the post-intervention group reported an average of 1 7 exams ($p < 05$) Additionally, 15 7% of baseline patients and 2 0% in the follow-up group reported receiving four or more pelvic exams ($p < 05$)

Postabortion Family Planning

Almost all family planning indicators increased markedly between the pre- and post-intervention periods (Table 4) The majority of women in the follow-up reported receiving information about family planning and the possibility of an immediate pregnancy without contraceptive use ($p < 05$) Just two women (2 0%) in the pre-intervention group and almost 60% of the post-intervention women were provided a contraceptive method before discharge from the hospital ($p < 05$) The methods encompassed a wide range, including pills, injectables, IUDs and condoms

For baseline patients who received a method prior to discharge, about half reported being given family planning re-supply/follow-up information, although this figure represented just one woman Almost all family planning acceptors in the post-intervention group were provided information about method re-supply ($p = n s$)

Almost 30% of women in the baseline group obtained a contraceptive method within 30 days of their hospital stay, with the majority stopping by the family planning clinic for a method immediately after being discharged but before actually leaving the hospital

Information Provided to Patients

Only a small percentage of women in both the baseline and follow-up groups reported that the physician had introduced him/herself (Table 5) There were significant increases in the percentages of patients stating they were informed of their clinical diagnosis, required treatment and the results of their treatment

Some types of follow-up information offered by staff significantly increased after the intervention, including when the woman could return to her daily routine and when to expect the return of her menstrual period ($p < 05$) For other kinds of information, such as the need for personal hygiene and delay in return of sexual relations, there was a significant decline between the pre- and post-intervention phases ($p < 05$)

Patients' reports of the types of follow-up warning signs they were told about also indicated significant declines after the intervention ($p < 05$) A slightly higher percentage of post-intervention patients were given a follow-up medical appointment than those in the pre-intervention phase, although the difference was not significant

Finally, over three-quarters of baseline patients would recommend the hospital's services to a friend or relative with incomplete abortion, while virtually all women in the follow-up phase would do so ($p < 05$)

Pain Perceptions

During the exit interview, patients were shown a scale ranked from 0 to 10 and asked to measure the severity of their pain at specific times during their hospital stay A score of 0 indicated no pain felt while a score of 10 represented the maximum amount of pain ever felt

Table 6 lists the mean scores before, during and after the evacuation procedure in each of the pre- and post-intervention groups Average pain scores during and after the procedure were similar between the two groups ($p = n\ s$) Among post-intervention patients, women reported less pain before the procedure than those in the pre-intervention group (4 2 vs 5 8, respectively, $p < 05$)

The percentage of women reporting severe pain (mean≥7) were similar in both pre- and post-intervention groups during and after the procedure ($p = n\ s$) The percentage of women reporting severe pain prior to the evacuation procedure dropped by more than one-third between the pre- and post-intervention phases ($p < 05$)

Women in the baseline phase perceived, on the average, decreasing levels of pain as they moved through the treatment process ($p < 05$) In the follow-up group, mean pain scores were not significantly different before and during the procedure, although there was a significant decrease in the post-procedure score

Length of Patient Stay, Costs and, Resource Utilization

Based on observation of 17 patients in each of the pre- and post-intervention phases, the average length of stay was 33 3 hours and 6 4 hours, respectively, a reduction of 80 8% (Figure 2)

The total stay was divided into three stages The pre-procedure stage included patient time spent prior to the evacuation procedure for admission, clinical examination, waiting and transport, and average time spent was over two hours longer for baseline patients The procedure stage encompassed time for the evacuation procedure itself, patient recovery and waiting and transport, while the post-procedure period covered post-operative recovery and discharge processes In the pre-intervention phase, patients spent the largest proportion of their time in the recovery period

(post-procedure), remaining an average of 20 1 hours or 60 4% of their total stay

During the observations, data collectors recorded the amounts of time spent by various types of providers During the pre-intervention phase, hospital staff had an average of 3 5 hours of direct patient contact, while in the post-intervention period, providers spent slightly less, 3 2 hours Women treated during the baseline phase, therefore, spent 10 5% of their stay with hospital staff (more than one staff member could attend a patient simultaneously), while patients in the follow-up phase were in contact with staff 50 0% of the time The remainder of their stays was spent waiting or recovering

The type of hospital personnel providing the largest proportion of care varied between the two phases Student *obstetrices*, who are not paid for their services, were the staff with the most patient contact during the pre-intervention phase, 21 6% of total personnel time Staff *obstetrices* provided 45 3% of total provider time in the post-intervention period Resident physicians had the second-most-frequent amount of contact in both phases

The total average cost to treat a postabortion patient was divided into three categories, personnel, medications/supplies/equipment and hospitalization, and is reported in US dollars (Table 7) Using the Ipas methodology, average cost per patient in the pre-intervention phase was $118 72 and $45 14 in the post-intervention phase, a drop of 62 0% [3] The pre-intervention "unit cost" of treatment for a postabortion patient, using the WHO/PAHO methodology, was $112 44

Personnel costs did not vary markedly between the pre- and post-intervention periods Medications for the post-intervention phase increased 45 2 % compared to the pre-intervention period ($7 53 vs $10 93), primarily due to large increases in the prices of medications in Peru in the one-year period between collection of pre- and post-intervention cost data Instrument costs for the post-intervention phase, including MVA instruments, averaged $1 80 per patient Addition of contraceptive commodities and MVA instruments for post-intervention patients contributed to the increase in the overall medications/supplies/equipment category

Due to the extended stay for baseline patients, almost $100 00 (84 2%) of the total cost of care was attributable to hospitalization costs Costs in the post-procedure period were the highest of all three locations, primarily because women spent an extended amount of time (20 1 hours) recovering on the obstetrics-gynecology ward, although long stays following uterine evacuation usually were not medically necessary

With the large reduction in average patient stay in the post-intervention period, hospitalization costs similarly dropped Forty-two percent of total average cost was due to hospitalization costs However, with the use of cost-per-bed minute for hospitalization overhead costs in the post-intervention period, it is likely that these inpatient hospital costs overestimated the actual "outpatient surgery" overhead costs of the new emergency room Hospitalization costs were highest in the pre-procedure and post-procedure stages

Postabortion patients paid an average of $39 16 in the pre-intervention phase for hospital fees, including admission, hospitalization (overnight stay), the evacuation procedure and laboratory tests In addition, patients purchased medications and supplies from the hospital pharmacy or in some cases, family members bought them at pharmacies in the community Using the average medications/supplies cost to the hospital ($13 81) as an approximation of the woman's expenditures, estimated out-of-pocket expenses paid by the patient were $52 97 With an average total treatment cost of $118 72, and cost recovery in the amount of $52 97 through fee collection and medications purchases, the hospital underwrote an estimated amount of $65 75 per postabortion patient

Hospital officials reduced patient fees in the post-intervention period, so that patients paid an average of $22 94 per patient An additional $14 46 in average medication purchases were made (documented through receipts) for a total out-of-pocket expense to the patient of $37 40 Total treatment costs in this phase averaged $45 14, with the hospital underwriting an estimated $7 74 per patient

DISCUSSION

Clinical Care

Use of MVA steadily increased during the course of the study Variations in the percentages of patients treated with MVA between July and October 1997 were likely attributable to disruptions associated with moving to the newly-opened emergency room Although the project officially ended in February 1998, new resident physicians having begun their hospital service, are being trained in the use of MVA, and the technique is currently utilized for almost all medically-appropriate postabortion patients

There were moderate improvements in pain management in the post-intervention period, with a decrease in the exclusive use of heavy sedation and alternative combinations of medications substituted for some women Almost 7% of women in the follow-up group, for example, were given light sedation and 14 7% received a paracervical block with diazepam Future

monitoring and refresher training should include a focus on pain management practices, including the safety and resource advantages of lighter levels of pain medications, the importance of verbal reassurance to patients and the need to individualize pain control regimens

Infection prevention practices remain a priority as well Pre- and post-intervention observations of services indicated improvements in infection prevention but that problems in such areas as consistent handwashing and glove use still exist (data not reported)

Postabortion Family Planning

As in most hospitals in the region, family planning offered to postabortion patients was virtually non-existent prior to implementation of the integrated model The gap reflected a lack of linkages between the gynecology services, which provided treatment of abortion complications, and the family planning clinic

The hospital's family planning clinic was well-equipped and staffed During the baseline phase, student obstetrices visited the obstetrics-gynecology ward on week-day mornings to counsel postpartum and postabortion patients but postabortion coverage was minimal and method provision confined to the clinic itself While the obstetrics-gynecology staff had participated in many family planning courses in recent years, there had been little focus on the applicability of this information to postabortion patients The physical separation between the clinic and the obstetrics-gynecology floor, staff turnover, low priority of postabortion patients, limited accessibility to contraceptive methods and minimal staff knowledge about postabortion family planning were factors which contributed to a deficit in services However, in spite of the lack of postabortion family planning offered to pre-intervention patients during their hospital stay, nearly 30% of women later sought out these services on their own The percentage of women in both groups who returned after discharge may be an underestimate as the contraceptive acceptance of patients whose records were not found or who obtained family planning services elsewhere is unknown

Integration of family planning into postabortion treatment in the new emergency room was a challenge Contraceptive commodities were not usually kept in the emergency room and staff responsibilities for family planning outside the outpatient clinic were not well-defined Furthermore, 24-hour a day family planning services, as are required in an emergency setting, implied additional supervision and monitoring

The improvements in postabortion family planning were facilitated by the presence of a strong family planning clinic in the hospital The clinic director was a key player in the implementation of integrated services and the clinic supplied commodities to the emergency room The staff *obstetrices* (as opposed to student *obstetrices)* who provided much of the postabortion family planning were also essential Although there was initial reluctance to take on additional tasks, the *obstetrices* stationed in the emergency room came to appreciate their increased skills for postabortion family planning and other aspects of postabortion care

Although the decreased length of patient stay could have been an obstacle to the delivery of postabortion family planning, the efficiency of concentrating all aspects of postabortion care in one location and the availability of trained staff was advantageous to reaching women with counseling and services Furthermore, the cost data demonstrated that even with the addition of postabortion family planning counseling and commodities, the reduced length of stay in the post-intervention period led to lower costs to the hospital as compared to the pre-intervention

Information Provided to Patients

Changes in staff communication with patients was mixed, with post-intervention data indicating increases in receipt of some types of information and drops in receipt of others In general, however, patient counseling remained problematic Although almost one-half of follow-up patients reported being told about the type of treatment they needed, a smaller percentage were informed about their diagnosis, treatment results and follow-up care Even fewer women were told about warning signs requiring medical attention This left a large group of women uninformed about their current medical condition and future care

Supervisors of the new postabortion services largely attributed these deficits to staff's paying less attention to the need for comprehensive information by ambulatory patients, as opposed to those who are hospitalized and perceived to be "sicker " Under the newly-organized services, the relatively brief post-operative recovery period (2 6 hours) should nevertheless allow time for counseling about follow-up personal care and warning signs, provision of family planning information, and in some instances, delivery of a contraceptive method That adequate counseling did not occur for most women highlights the need for a well-planned approach for conveying important information, including individual counseling and use of printed and audiovisual materials

Pain Perceptions

Management of pain was one of the more challenging aspects of the new postabortion care services, as it is in many facilities No pain medications were administered to women in either the baseline or follow-up phases while they waited for their procedure Yet the pre-procedure average pain score of baseline patients as well as the percentage of those reporting severe pain was significantly higher than those in the follow-up group

Lower pain scores among women in the post-intervention group may be due to several factors These patients received fewer pelvic exams, their pregnancies were of lower gestation and they waited much less time in the pre-procedure period (5 2 hours in the baseline vs 2 9 hours in the follow-up) Furthermore, during much of their long hospital stay, baseline patients had limited interaction with providers, spending much of their time in relative isolation while they waited In contrast, women in the follow-up phase spent less time in the hospital and proportionately more time in direct contact with providers During the pre-procedure period, baseline patients spent, on average, 17 9% of their time with providers, while follow-up phase patients were in contact with staff an average of 42 5% of the time However, over one-quarter of women reported being in severe pain, indicating a need for pain medication during their wait

Several areas of concern about pain management during the evacuation procedure remain Although their were no significant differences in mean pain scores between the two groups during the procedure, over one-third of MVA patients reported severe pain These findings underscored the complexities of pain management, the need for staff support to patients and determination of which medications provide the greatest relief to patients with the lowest safety risks

Costs, Resources and Length of Stay

Strong political and administrative support was a major contributor to the success of the new postabortion services Currently in Latin America, many health systems are engaged in a process of administrative reform Hospital administrators are consequently focused on increasing efficiency, lowering costs and improving the quality of services In Peru, hospitals also have responsibility for creating and monitoring their own budgets Initially, the hospital director had reservations about the idea of an alternative model of postabortion care With baseline data that documented the high costs of inpatient PAC services, she quickly concluded that a new approach could reduce costs to the hospital and minimize congestion and overnight stays

The in-depth interviews with women provided additional confirmation of the burden of long stays and high costs to patients (Benson and Huapaya, 1997) A comment by a 33-year-old patient illustrated the frustration and anger generated by extended waits for care, " The disagreeable part is that they make you wait, that they leave you there hanging, it appears that you're not worth anything They ought to have more consideration for the time that they have you waiting because you come here because you really need it, not to be begging for service "

Administrative procedures originally required that treatment could not begin until postabortion patients paid the appropriate fees Patients often perceived these charges as unaffordable and several women commented that they felt like "prisoners" in the hospital when they were unable to pay but yet were not allowed to leave

The cost and resource data prompted the director to reduce patient fees for MVA patients by half (80 soles [US $32] to 40 soles [US $16] per postabortion patient) Fee collection procedures were also modified treatment could be initiated immediately, rather than delayed until patients and/or their families could locate funds These policy changes reduced a serious economic barrier to postabortion care services

The re-organization of services was the key to reducing costs to the hospital Shifting postabortion treatment from an inpatient admission to an outpatient surgical service, along with centralizing care in one location, meant that the overall length of stay and related hospitalization overhead costs were dramatically reduced The hospitalization costs were by far the largest proportion of total costs and their reduction more than offset small increases in post-intervention costs of personnel and medications/supplies/equipment Staff time, along with supply costs, are associated with direct patient contact and may reflect the overall improved quality of postabortion care in the follow-up phase

Cost estimates were conservatively calculated and therefore, probably underestimated the resource benefits to the hospital It is also important to recognize that the "savings" from the new postabortion care model will not translate into drops in expenditures but rather will free up resources to channel into other services offered by the hospital

Potential for Sustainability of PAC Services

A major goal of any postabortion care model should be sustainability, that is, integration into the facility's ongoing reproductive health services and supported with the institution's own resources Strategic capacity,

operational capacity and political leadership are all necessary for a hospital to achieve this objective (Potts et al , 1997)

Strategic capacity, which included the existence of supportive PAC policies and the willingness of the facility to allocate its own resources to these services, developed throughout the course of the project These included modifications in patient fees and processes, commitment of staff time for training and supervision, provision of contraceptive commodities and other supplies, and dedication of local resources for new infrastructure

The hospital's operational capacity for upgrades in PAC services also increased markedly over time The most obvious was in material improvements with the opening of the emergency room The new physical facilities facilitated the adoption of a new approach to postabortion care Few hospitals in Latin America, Asia or Africa will be able to renovate a facility to this extent However, even modest upgrades---painting a treatment room and adding a privacy screen---improve staff attitudes, underscore changes in the system of care and thereby increase the quality of care for patients

Incorporation of MVA and other PAC content into routine obstetrics-gynecology training for residents and other staff was a landmark for sustainability Although still early in the post-project stage, the continued use of MVA is another indicator of the institutional adoption of the technique During the course of the study, a local medical supply distributor added MVA instruments to his product line and obtained appropriate governmental approvals for legal importation and sales Local availability of instruments is an essential component for long-term strength of the services

Hospital officials themselves rated the prospects for sustainability of the integrated PAC services as high Institutional strengths which were especially perceived to foster continuation of postabortion care included hospital and departmental policies, the availability of personnel, contraceptive methods and medical instruments, physical infrastructure of the emergency room, procedure room and recovery area, and providers' technical competency in use of the MVA technique

Finally, authorities from both the central Ministry of Health and the hospital staff designed and implemented the intervention, monitored quality of care, resolved problems and disseminated the findings internally and to other organizations in Peru Their technical and political leadership of the improved system is the major source of its success and the likelihood of continued progress

Acknowledgments

The authors of this paper wish to express their appreciation to the many colleagues who helped make this project possible In Peru, the following individuals deserve special recognition Luz Juárez, Julio Aguilar, Jorge Alcantará, Edwin Mejía, Consuelo Rodríquez (Hospital Carrión), Carlos Joo Luck (Ministry of Health, Callao Sub-Region), Federico León, María Rosa Gárate, Jeanne Noble (Population Council), Wilfredo Solis (Universidad Peruana Cayetano Heredia), Josephine Gilman, Carlos Guitierrez (PRISMA), and Lucy López, Tom Morris, Susan Brems (USAID)

Hector Verástegui (Peru)) provided invaluable assistance in data management and analysis Jim Foreit (Population Council/Washington), Sarah Harbison (USAID/Washington) and Rosalinda Lidh (Ipas) offered enthusiasm and technical support to the project

We wish to thank the women and health care staff who freely shared their perspectives during a difficult time

This paper is dedicated to the memory of our colleague and supporter of this research, Dr John R Nagahata Susanibar

An earlier draft of this paper was presented at the January 1998 conference in New York, Global Meeting on Postabortion Care Advances and Challenges in Operations Research

Operations research conducted under this project was funded by the U S Agency for International Development, Office of Population, under Contract No AID/CCP-3030-C-00-5007, Latin America and the Caribbean Operations Research and Technical Assistance in Family Planning and Reproductive Health

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Notes

[1] Personnel Costs Salaries and benefits were included in personnel costs

Medications/Supplies/Equipment Costs Pharmacy and other records were reviewed to obtain unit costs of medications and supplies and then pro-rated to reflect actual quantities used for each patient observed Due to the longevity of the equipment used in the pre-intervention phase (for example, sharp curettage instrument sets in the operating room), equipment costs were valued at almost zero, an underestimate if replacement were required

Although MVA instruments were donated for the study, purchase of these instruments was included in the calculations to present a more realistic picture of future PAC costs to the hospital Costs of MVA syringes and cannulae were based on individual-purchase prices of Ipas-produced instruments from a Peruvian distributor and therefore, included national taxes and customs charges Purchase prices for a syringe and cannulae to an individual physician are usually higher than those charged to an institution (such as a hospital) making large-volume purchases Therefore, the use of individual-purchase prices probably overestimated MVA costs Furthermore, with proper infection prevention practices, MVA syringes and cannulae can be safely re-used Per-patient MVA costs were based on an estimated 50 uses per syringe and 20 per cannula, although MVA providers around the world historically report

much higher number of uses per instrument This conservative number of uses, therefore, likely further overestimated average MVA costs per patient Contraceptive commodities costs were based on purchase prices to the national family planning program of the Ministry of Health but do not include taxes, customs fees or distribution costs

Hospitalization Hospital operating expenditures for 1995 were to used to calculate hospitalization (overhead) costs Using a methodology developed by the World Health Organization/Pan American Health Organization, expenditures were apportioned among individual departments and services, and general administrative expenses were then pro-rated to each of these departments (Ministerio de Salud de Peru, 1996) A cost-per-bed minute was calculated, based on the percentage of overall hospital expenses utilized for hospitalization (inpatient care) and the annual bed occupancy rate The average length of stay in minutes (based on patient observation) was then multiplied by the cost-per-bed minute to determine the average hospitalization (overhead) costs per patient Hospitalization costs for each stage during the stay (pre-procedure, procedure, post-procedure) as well as for the entire length of stay are reported

Total average costs were for actual service delivery Due to the difficulties in obtaining depreciation costs of capital equipment or facilities, these were not included in the calculations Construction costs for the new emergency room and staff training costs were not included

[2] Annual hospital operating expenditures (also used to determine cost-per-bed minute in the Ipas methodology) were categorized into three units, administrative, intermediate (such as laboratory, radiology and obstetric center) and final (such as outpatient, hospitalization and emergency room) Expenditures were distributed to each of the specific departments comprising these units Administrative costs were pro-rated and assigned to each department Production output (such as the annual number of patients treated) for each department was determined A unit cost for each department was calculated by dividing a production output by the department's expenditures The per patient cost for postabortion treatment was obtained by adding the unit costs for all departments providing care

[3] *Obstetrices* in Peru and several other South American countries are university-trained midwives who complete a five-year theoretical and practical training program Peruvian *obstetrices* provide the bulk of reproductive health services, including basic gynecology services, family planning and routine obstetric services such as prenatal care and deliveries

[4] A small proportion of sharp curettage procedures, for women in advanced stages of pregnancy for example, are still provided in the operating room, followed by recovery on the obstetrics-gynecology ward Long-term or permanent clinical contraceptive methods such as implants and female sterilization are available only in the hospital's family planning clinic or in the emergency room during previously-scheduled weekday hours

Table 1

Sociodemographic Characteristics of Postabortion Patients
Hospital Carrión, Peru, 1996-97

Variable	Pre-Intervention %	Post-Intervention %
Age		
15-19	12 7	12 7
20-24	30 4	23 5
25-29	24 5	24 5
30-34	16 7	16 7
35-39	9 8	17 6
40-44	5 9	4 9
	Mean = 27 1	mean = 27 8
Marital Status		
Married	30 2	34 1*
In union	54 2	39 6*
Single	11 5	25 3*
Separated	4 2	1 1*
Educational Level		
< 7 years	23 5	12 7
7-12 years	62 7	63 7
> 12 years	13 7	23 5
Employment		
Housewife	62 7	61 0
Employed with benefits	17 6	20 0
Employed without benefits	10 8	9 0
Other	8 8	10 0
	n=102	n=102

From data in patient exit interview and clinical history form

% may not sum to 100% due to rounding

* p < 05

Table 2

Reproductive History and Goals of Postabortion Patients
Hospital Carrión, Peru, 1996-97

Variable	Pre-Intervention %	Post-Intervention %
Gravidy		
1	21 8	32 4
2-3	44 6	39 2
≥ 4	33 7	28 4
	mean = 3 1	mean = 2 7
Parity		
None	26 7	36 3
1-3	61 4	54 9
≥ 4	11 9	8 8
	mean = 1 6	mean = 1 3
Wanted Current Pregnancy	37 4	36 3
Timing of Future Pregnancy		
Within 3 months	1 0	6 6
Between 4 months and 2 years	33 3	36 3
> 2 years	35 4	31 9
Never	30 3	25 3
	n=102	n=102

From data in patient exit interview and clinical history form

% may not sum to 100% due to rounding

* p < 05

Table 3

Contraceptive History
Hospital Carrión, Peru, 1996-97

Variable	Pre-Intervention %	Post-Intervention %
Contraceptive knowledge	98 0	92 2
Ever-use of contraceptives	96 0	77 4*
Method use at time of Pregnancy	52 6	36 1*
Rhythm	60 0	65 4
Condom	14 0	11 5
	n=102	n=102

From data in patient exit interview and clinical history form

* $p < 05$

Table 4

Postabortion Family Planning Provided
Hospital Carrión, Peru, 1996-97

Variable	Pre-Intervention %	Post-Intervention %
Family planning information provided	18 2	77 5*
Patient told of risk of immediate pregnancy	38 4	64 7*
Contraceptive method provided	31 4	63 7*
before discharge	2 0	58 8*
within 30 days of discharge	29 4	4 9*
Type of method provided **		
Pills	14 7	23 5
Injectables	8 8	33 3
IUD	2 0	2 9
Condom	2 9	0 0
Vaginal Tablets	0 0	2 9
Implant	2 0	0 0
Tubal Ligation	1 0	0 0
Re-supply information given	50 0	91 5
Family planning referral appointment provided	50 5	47 6
	n=99	n=102

From data in patient exit interview and clinical history form

* $p < 05$

** Type of method unknown for one post-intervention acceptor

Table 5

Information Provided to Postabortion Patients
Hospital Carrión, Peru, 1996-97

Variable	Pre-Intervention %	Post-Intervention %
Doctor introduced him/herself	8 8	12 9
Medical diagnosis	10 8	30 4*
Treatment needed	9 8	47 1*
Treatment results	11 8	28 4*
Follow-up Care		
Personal hygiene	54 5	36 6*
When to return to daily routine	7 9	26 7*
When menstruation may return	9 9	25 7*
To delay sexual relations	61 8	33 3*
Warning Signs		
Severe pain	81 8	20 8*
Extended bleeding	36 4	12 9*
Heavy bleeding	51 5	18 8*
Vaginal discharge with odor	23 7	13 1*
Fever	62 6	23 5*
Chills	26 3	13 7*
Fainting	23 2	13 7*
Follow-up appointment	59 8	69 3
	n=102	n=102

From data in patient exit interview

* p < 05

Table 6

Pain Perceptions Reported by Postabortion Patients
Hospital Carrión, Peru, 1996-97

	Mean score		% with score ≥ 7	
Variable	Pre-Intervention	Post-Intervention	Pre-Intervention	Post-Intervention
Pre-procedure	5 8	4 2*	44 1%	28 7%*
During procedure	3 9	4 7	26 5%	32 7%
Post-procedure	1 0	1 4	1 0%	1 0%
	n=102	n=101	n=102	n=101

From data in patient exit interview and clinical history form

* $p < .05$

Table 7

Average Total Cost of Postabortion Patient Care in U S Dollars
Hospital Carrión, Peru, 1996-97

Cost category		Pre-Procedure pre-int	Pre-Procedure post-int	Procedure pre-int	Procedure Post-int	Post-Procedure pre-int	Post-Procedure post-int	Total in $ and % of total pre-int	Total in $ and % of total post-int
Personnel	$	1 57	1 99	2 15	2 73	1 21	1 25	4 93	5 97
	%							4 2%	13 2%
Medications/ supplies/ equipment	$	3 27	6 59	8 02	9 99	2 52	3 39	13 81	19 97
	%							11 6%	44 2%
Hospitalization	$	15 72	8 70	23 89	2 55	60 37	7 95	99 98	19 20
	%							84 2%	42 5%
Total		20 56	17 28	34 06	15 27	64 10	12 59	118 72	45 14
								100%	100%

n = 17 pre-intervention
n = 17 post-intervention

Figure 1

Percentage of Patients ≤ 12 weeks Uterine Size
Treated for Incomplete Abortion with MVA

Peru, 1996 - 1998

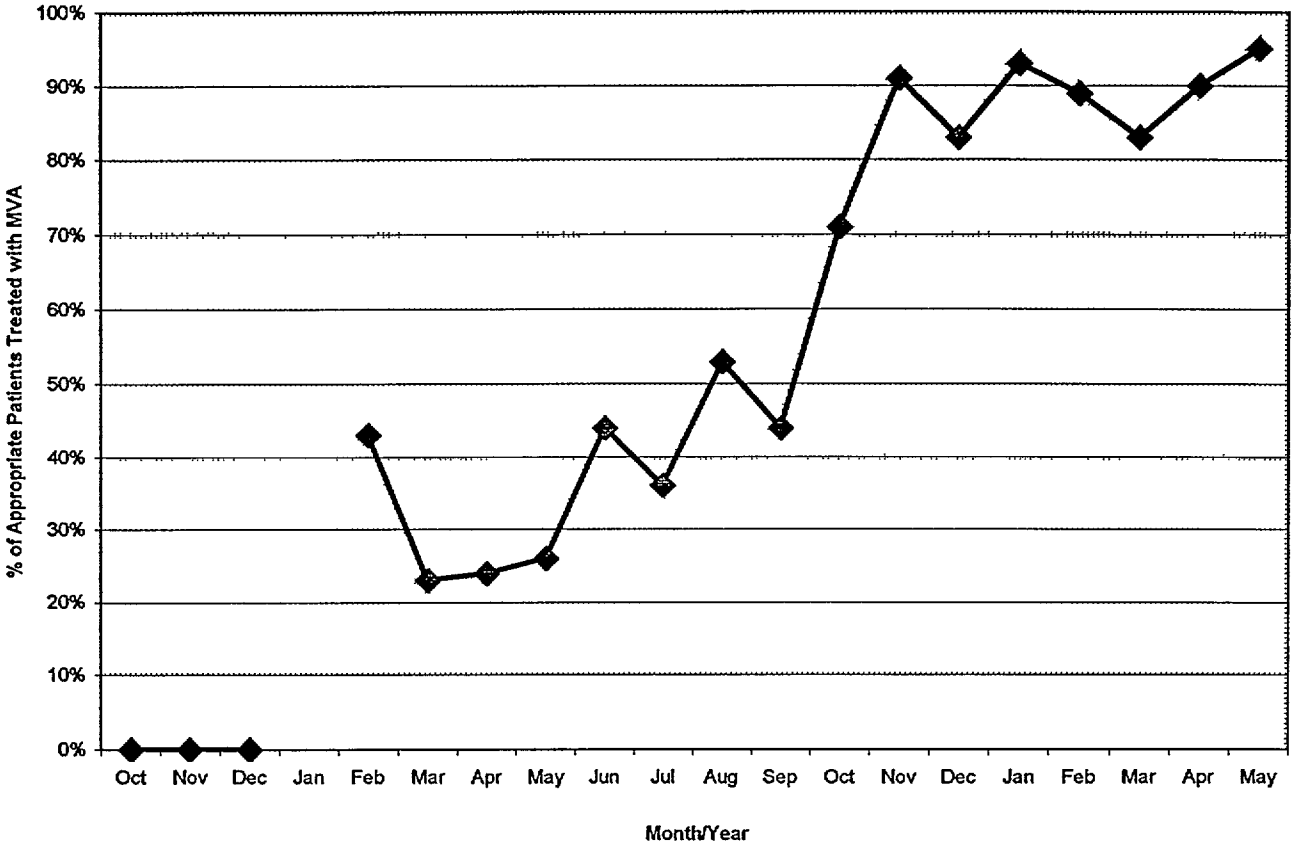
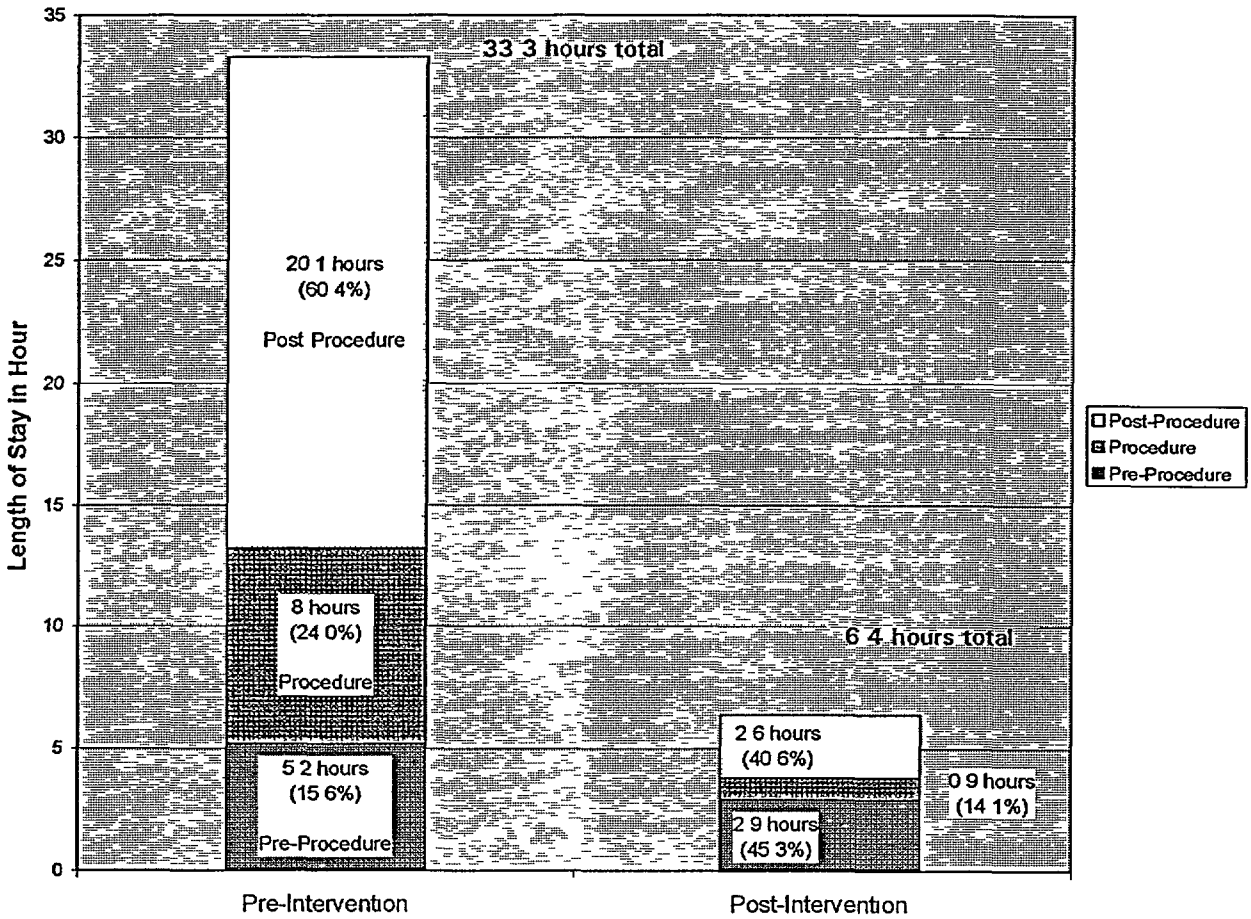


Figure 2

Average Length of Stay for Postabortion Patients
by Treatment Stage

Peru, 1996-97



n = 17 pre-intervention
n = 17 post-intervention