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# REPORT OF THE POSTABORTION CARE TECHNICAL ADVISORY PANEL



**APRIL 2007**

This publication was produced for review by the United States Agency for International Development (USAID). It was prepared by Vibeke Rasch, Douglas Huber, and E.O. Akande. The purpose of the report is to provide recommendations to USAID regarding its postabortion care program.

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The purpose of this report is to provide recommendations to USAID regarding its postabortion care programs. The authors' views expressed in this publication do not necessarily reflect the views of USAID or the United States Government.



# CONTENTS

Acknowledgments .....	v
Abbreviations and Acronyms .....	vi
Preface .....	vii
Executive Summary .....	1
Introduction .....	3
<b>1. Emergency Treatment .....</b>	<b>4</b>
1.1. Safety and Efficacy of Manual Vacuum Aspiration and Sharp Curettage .....	4
1.2. Sharp Curettage .....	5
1.3. Anesthesia and Complications/Morbidity Related to Emergency Treatment .....	6
1.4. Cost .....	7
<b>2. Postabortion Contraceptive Services .....</b>	<b>8</b>
2.1. Postabortion Contraceptive Services at the Time of Emergency Treatment .....	8
2.2. Postabortion Contraception Follow-up Visit .....	9
<b>3. Community Involvement .....</b>	<b>10</b>
<b>4. Proposed Definition of Postabortion Care .....</b>	<b>11</b>
<b>5. Pertinent Findings Not Reflected in the Scope of Work .....</b>	<b>11</b>
5.1. Interpregnancy Intervals .....	11
5.2. Misoprostol for Treatment of Incomplete Abortion .....	12
<b>6. Further Collaboration with FIGO, ICM, and WHO for the Scale-up of Postabortion Care Programs .....</b>	<b>12</b>
<b>7. Recommendations for Scaling Up Postabortion Care .....</b>	<b>13</b>
7.1. Emergency Treatment .....	13
7.2. Postabortion Contraceptive Services .....	13
7.3. Community Involvement .....	13
7.4. Other Recommendations .....	13
<b>Appendix .....</b>	<b>15</b>
<b>Bibliography .....</b>	<b>16</b>



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# ABBREVIATIONS AND ACRONYMS

<b>CI</b>	confidence interval
<b>D&amp;C</b>	dilatation and curettage
<b>EVA</b>	electrical vacuum aspiration
<b>FIGO</b>	International Federation of Gynecology and Obstetrics
<b>ICM</b>	International Confederation of Midwives
<b>ICPD</b>	International Conference on Population and Development
<b>MVA</b>	manual vacuum aspiration
<b>OR</b>	operations research
<b>PAC</b>	postabortion care
<b>RR</b>	relative risk
<b>STI</b>	sexually transmitted infection
<b>USAID</b>	United States Agency for International Development
<b>VA</b>	vacuum aspiration
<b>WHO</b>	World Health Organization

# PREFACE

## United States Government support of postabortion care programs

Since 1993, the United States Government has supported postabortion care (PAC) programs in more than 40 countries. PAC programs have served not only women presenting with complications of unsafe abortion, but also women who have experienced similar complications following miscarriage. Support from the White House for PAC is evidenced in President George W. Bush's statement accompanying the Presidential Memorandum that restored the Mexico City Policy. The support of the United States Agency for International Development (USAID) for PAC was further emphasized in a September 10, 2001, memorandum from USAID's Deputy Assistant Administrator, which stated:

*In announcing the restoration of the Mexico City Policy, President Bush acknowledged that voluntary family planning services were one of the best ways to prevent abortion. The U.S. Agency for International Development's (USAID) Population, Health and Nutrition Center places high priority on preventing abortions through the use of family planning, saving the lives of women who suffer complications arising from unsafe abortion, and linking those women to voluntary family planning and other reproductive health services that will help prevent subsequent abortions. Postabortion care should be a key component of both our Safe Motherhood and family planning programs.*

In 2001, the USAID Postabortion Care Working Group commissioned a global evaluation of USAID's PAC programs. Between October 2002 and December 2003, USAID undertook the process of developing a global PAC strategy. The strategy development included individual and group interviews of individuals from private volunteer organizations, cooperating agencies, and USAID staff in Washington and field missions. The strategy included the development of a revised model for PAC, a results framework, and indicators. Key themes guiding the implementation of the PAC strategy included standardization of training materials, guidelines, and indicators; expansion and institutionalization of PAC at the country level; identification of successful models; leadership in identifying further research; compiling research findings on the impact of PAC programs and providing this information to donors to mobilize global resources; and monitoring and evaluation.

## Need for Postabortion Care Technical Advisory Panel

In response to the PAC strategy, the USAID Postabortion Care Working Group commissioned an analysis and synthesis

of PAC research, which took place between 2003 and 2005. The Group's findings were presented to participants from USAID cooperating agencies at a meeting held in Washington in March 2005. Some participants questioned a number of the findings. The questions raised at this meeting formed the basis of the scope of work for the Postabortion Care Technical Advisory Panel.

In October 2005, the USAID Postabortion Care Working Group commissioned the Postabortion Care Technical Advisory Panel. This panel consisted of individuals recommended by USAID, the International Federation of Gynecology and Obstetrics (FIGO), and the World Health Organization (WHO). The Panel was convened to respond to questions raised at the March 2005 meeting. The Panel members were asked to examine 33 articles that had been reviewed for the PAC research compendium and other documents. The Panel's review then expanded to more than 90 documents. The questions posed to the Panel are included in the Appendix to this report.

The areas for review included the following:

- a. The safety and efficacy of sharp curettage compared with vacuum aspiration (VA) in providing PAC services
- b. Which technologies for emergency treatment should be used, and when and where these technologies should be used for the scale-up of PAC programs worldwide
- c. Cost determinants related to PAC/prolonged hospital stay
- d. The determinants of the increased complication rate with use of sharp curettage (i.e., caused by type of anesthesia, type of emergency treatment)
- e. Type of pain management technologies that can be used for sharp curettage and VA
- f. Recommendations for further research in these areas
- g. Review of and response to a proposed draft definition for PAC

This report reflects the findings of this Panel's review. Its purpose is to assist USAID in the ongoing and future scale-up of safe and effective PAC programs worldwide for women experiencing complications related to miscarriage and incomplete abortion.



# EXECUTIVE SUMMARY

Each year, 19 million women experience an unsafe induced abortion, and 31 million women have a spontaneous abortion (miscarriage). Postabortion care (PAC) is a package of services for women who experience complications following either type of abortion. Since 1994, the United States Agency for International Development (USAID) has provided more than \$24 million in support of PAC programs in more than 40 countries. The PAC model of care supported by USAID has uniformly included manual vacuum aspiration (MVA), financed by other donors, to treat incomplete abortion. This is consistent with international recommendations that vacuum aspiration (VA) – both MVA and electrical vacuum aspiration (EVA) – is preferred to sharp curettage.<sup>1</sup> However, in many settings, MVA equipment is absent or limited, and women are treated with sharp curettage. These women generally do not receive other key elements of PAC such as postabortion contraception. Given the limited use of MVA globally, the current USAID PAC approach will serve only a small fraction of women with incomplete abortions. The challenge is how to reach more of these women with PAC services and to improve quality of care.

## Postabortion contraception services

Prevention of repeat abortions through the provision of postabortion contraception is a major reason for USAID and other agencies to support PAC services. However, postabortion contraception is often the most neglected health component of PAC, although it is the least controversial.

Logically, whether emergency treatment employs sharp curettage or VA, every woman with an incomplete abortion should be offered immediate voluntary contraceptive services. Unfortunately, postabortion contraceptive services are usually absent where women are treated with sharp curettage. For example, many PAC programs have set up special rooms for MVA while sharp curettage continues to be performed in the main operating theater, thus creating a physical division of these services (Cobb et al., 2001). Such a division reinforces the neglect of women being treated with sharp curettage within the PAC model.

It is the Panel's opinion that a systematic approach is needed to better ensure the sustainability of postabortion contraceptive service delivery and should be characterized by the following:

- PAC is delivered as a routine service for all women with incomplete abortions, irrespective of the uterine evacuation technique.

- Protocols and forms are used to help the health care staff provide postabortion contraceptive services and to provide a basis for supervision.
- Written information about postabortion complications and contraceptive methods is provided to enhance quality of care and increase postabortion contraceptive use.
- Postabortion contraception is supported and strengthened through a follow-up visit at one month, which can take place at either the treatment location, or at a more peripheral site, according to the woman's preference.

We propose a simple definition of PAC that includes the core components and gives focus to postabortion contraception:

Postabortion care is a package of services provided to women having an incomplete abortion after a spontaneous or an induced abortion. PAC comprises the following three key components that should be implemented in a systematic way:

1. Emergency treatment
2. Postabortion contraceptive counseling and services
3. Community involvement for early recognition and management of abortion complications and to support and strengthen ongoing contraceptive use

Evaluation and treatment of sexually transmitted infections (STIs) and voluntary HIV counseling and testing should be optional, depending on human resources and the prevalence of STIs and HIV infection in different regions.

## Conclusions

### PAC Access and Postabortion Contraception

- Preventing repeat abortions through the provision of postabortion contraception is a strong continuing rationale for USAID support of PAC programs.
- Given this focus, PAC programs supported by USAID are narrow in scope, because the current PAC model is employed only with MVA, which is limited in its availability.
- This limitation will continue to exclude the vast majority of women and their providers in many countries where USAID works. Sharp curettage is often the primary or only technique for treating women with incomplete abortions in these countries, and change may be slow or not occur at all.

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<sup>1</sup>Also known as "dilatation and curettage" (D&C).

- High levels of postabortion contraceptive use can be achieved when the PAC model is employed in settings using either sharp curettage or VA. In and of itself, MVA does not appear to be a determining factor in achieving increased postabortion contraceptive use.

## **PAC Organization of Services – Clinical**

### **Considerations and Cost**

- VA (electrical or manual) is recommended by WHO as the preferred technique for uterine evacuation in PAC services. However, VA is not acceptable in some countries, and in others, both sharp curettage and VA will continue to be used. Where both are used, a transition to VA is encouraged.
- VA is less painful than sharp curettage, permitting lower doses of analgesia. This is a rationale for preferring VA and extending PAC services with MVA to rural settings for mid-level providers who have limited access to systemic analgesics.
- The Panel's judgment is that VA will be safer to perform than sharp curettage for mid-level providers in rural settings, and VA (particularly MVA) is more likely to be approved by policymakers. This is consistent with practices in several countries.
- In order to train mid-level providers in PAC with MVA, there is a need for hospital-based clinician trainers to be skilled in VA, including MVA.
- There was little or no difference in safety between VA and sharp curettage in the studies reviewed, contrary to the conventional wisdom. However, the data on sharp curettage were from tertiary care settings. We do not know if the findings will be the same in other care settings.
- Sharp curettage and VA were equally effective in completely evacuating the uterus, a necessary component of emergency treatment.
- Major cost savings were realized when services were reorganized to perform VA or sharp curettage in an outpatient setting. The cost savings were virtually the same for outpatient sharp curettage and VA. The savings were achieved by eliminating general anesthesia, the operating room, and admission to the hospital.
- Sharp curettage with systemic analgesia in an outpatient or ward setting was safe and acceptable in the studies reviewed.
- The paracervical block may have no beneficial effect in reducing pain in the treatment of incomplete abortion, raising the possibility of eliminating it for most (or all) PAC patients.

- Outpatient minilaparotomy for female sterilization, which USAID supports in resource-constrained settings, has proved safe and acceptable. Minilaparotomy is a more demanding procedure than emergency treatment with VA or sharp curettage. This extensive experience with minilaparotomy supports the feasibility of a PAC model that includes both outpatient sharp curettage and VA.

### **Recommendations**

- USAID should broaden its programs for implementing the PAC model, especially to include the postabortion contraception component in settings using sharp curettage. A shift in these settings to VA (usually electrical or manual), should also be encouraged, where feasible.
- Expanding use of the PAC model should include reorganization of services for VA as outpatient procedures, and additional studies should be carried out to verify the safety of sharp curettage as an outpatient procedure. The implementation of sharp curettage on an outpatient basis should follow the current principles of quality of care for outpatient surgery, including pain management with systemic analgesia.
- In scaling up PAC by using mid-level providers in rural settings, VA is preferred.
- Postabortion contraception should be instituted as a universal service offered to all women with an incomplete abortion, irrespective of the type of pain management or method of uterine evacuation. Where both sharp curettage and VA are used, inequities in access to postabortion contraception should be eliminated through uniform implementation of the PAC model. Expanding access to and use of postabortion contraception is a major reason for USAID to consider rethinking its narrow implementation of the PAC model.
- USAID, the International Federation of Gynecology and Obstetrics (FIGO), the International Confederation of Midwives (ICM), and the World Health Organization (WHO) should establish a PAC working group to systematize and standardize global PAC policies to expand the reach of the PAC model and to identify and promote best practices in implementing PAC programs. This should start with consultations between the USAID PAC Working Group, FIGO, ICM, and WHO to produce a consensus statement, including the proposed definition of PAC and key programmatic elements involved in extending PAC programs.

See the full report for additional recommendations.

# INTRODUCTION

## The magnitude of the problem

Abortion complications are among the major reasons women seek emergency obstetric care. According to the World Health Organization (WHO), each year approximately 210 million women throughout the world become pregnant, and as many as 80 million of these pregnancies are unplanned (WHO, 2004). Some unplanned pregnancies are carried to term, while others end in spontaneous or induced abortion. Estimates indicate that every year 46 million unwanted pregnancies are terminated by induced abortion; 27 million of these abortions are performed legally, whereas 19 million are performed outside the legal system (WHO, 2004). In the latter case, the abortions are often performed unsafely by unskilled providers, or under unhygienic conditions, or both. Unsafe abortions are known to be associated with high mortality. Based on various studies focusing on abortion-related mortality, it was estimated that unsafe abortions account for approximately 13% of all maternal deaths worldwide (WHO, 2004).

Spontaneous abortion (miscarriage) is also common, occurring in about 15% (or about 31 million) of the 210 million established pregnancies (Alan Guttmacher Institute, 1999). Women who experience spontaneous abortions also require postabortion care (PAC).

In 2001, the USAID Postabortion Care Working Group commissioned a global evaluation of its programs. As a result of this evaluation, a strategy for PAC programs was established in 2003. As a part of the strategy, a research compendium on PAC was compiled. More than 400 research documents related to PAC were reviewed. In March 2005, a meeting was held to disseminate the preliminary findings of the research. A number of questions were raised at this meeting. In response to these questions, the USAID Postabortion Care Working Group commissioned a technical advisory team – the Postabortion Care Technical Advisory Panel – to review a number of articles. This report reflects the findings of this review, which covered more than 90 documents, and will assist USAID in the ongoing and future scale-up of safe effective PAC programs.

## Postabortion care

To address the problem of unsafe abortion, a PAC model, Essential Elements of PAC, was developed in 1994 by Ipas for the PAC Consortium. This model listed three essential elements of PAC: 1) emergency treatment for complications

of spontaneous or induced abortion; 2) postabortion family planning counseling and services; and 3) linkages between emergency care and other reproductive health services, such as management of sexually transmitted infections (STIs). PAC has become a priority in reproductive health programs during the past decade, particularly since the 1994 International Conference on Population and Development (ICPD), where the need to give women access to high-quality services for management of complications arising from abortion and to postabortion contraceptive services was recognized (ICPD, 1994, paragraph 8.25).

## USAID's involvement with postabortion care

The PAC model developed by the PAC Consortium was adopted by USAID in 1994.

In 2003, building on an evaluation of its global PAC program in 2001 (Cobb et al., 2001), USAID revised its model for PAC. USAID's new PAC model included the following three core components: 1) emergency treatment for complications of spontaneous or induced abortion; 2) family planning counseling and service provision, STI evaluation and treatment, and HIV counseling and/or referral for HIV testing; and 3) community empowerment through community awareness and mobilization (USAID, 2004).

Since 1994, PAC programs have been initiated in at least 40 countries around the world, 30 of which receive USAID funds (Cobb et al., 2001).

## Future needs in the area of postabortion care

To document the strengths and weaknesses of USAID-supported PAC programs, USAID's Bureau for Global Health commissioned a global evaluation in 2001. As a result, the USAID Postabortion Care Working Group established a five-year strategy and commissioned the POLICY Project to compile and analyze existing research data on PAC in developing countries. Based on this review, a number of questions emerged concerning the following issues: the safety and efficacy of sharp curettage compared with vacuum aspiration (VA) in providing PAC services; technologies to be used for emergency treatment; cost determinants related to PAC/prolonged hospital stay; type of pain management technologies that can be used for sharp curettage and vacuum aspiration; models for improving postabortion contraceptive services; and how PAC can be used to "reposition" family planning.

# I. EMERGENCY TREATMENT

USAID's global evaluation of PAC programs found that manual vacuum aspiration (MVA) had taken a central role in their improvement and had been generally accepted in some countries' programs. However, the use of MVA has also been met with resistance and sometimes taken time to be fully accepted. There was a common concern in most countries regarding the sustainability of procuring MVA equipment from outside sources. Limited awareness of alternative distributors had impeded the wholesale purchase of MVA equipment. Limited service hours for MVA, limited number of providers trained in MVA, and women outside the established criteria for MVA usage were other factors that reduced the number of cases treated with MVA. While MVA had taken a central role in emergency treatment, the physical separation of MVA and sharp curettage patients meant that sharp curettage patients did not receive the full benefits of the PAC model (Cobb et al., 2001).

VA is preferred to sharp curettage (also called dilatation and curettage, or D&C<sup>2</sup>) for the treatment of incomplete abortion (WHO, 2003). However, VA will not completely replace sharp curettage, which may be used routinely to determine completeness of suction evacuation as a standard of care, or where VA equipment is not resupplied or is not permitted.

Efforts to make MVA widely available for emergency treatment of first trimester incomplete abortion have succeeded in a few countries, such as Kenya (Gebreselassie et al., 2005). Many more countries still rely on sharp curettage, though some are making progress toward introducing MVA.

In Tanzania, training for MVA was completed at many sites in 2003; however, the lack of MVA kits inhibited the ability to provide MVA as an alternative to sharp curettage (USAID trip report, 2004). The inconsistent availability of MVA kits and how it inhibits the expansion of PAC programs was discussed in a meeting held by the African Francophone Postabortion Care Initiative secretariat in Benin in 2004. Three major challenges were identified that slowed the expansion of PAC programs in participants' countries: 1) inconsistent availability of MVA kits, 2) scarcity of funding, and 3) lack of monitoring and evaluation. The issue of poor availability of the MVA kit was cited as the most common problem, especially with regard to procurement and supply both in countries with only a limited introduction of

PAC activities and those with more expanded activities (CEFOREP, 2004). At present, successful efforts are reportedly being made to provide adequate numbers of MVA kits (B. Crane, personal communication, January 2007).

WHO recommends the use of VA for treatment of incomplete abortion (WHO, 2003). Sharp curettage is almost always the alternative in clinical settings where VA is not available. The 2001 global evaluation showed that effective PAC programs can be provided with the use of sharp curettage. Service statistics from three sites in Bolivia from May to August 2001 showed a total of 1,360 PAC cases. Of this number, 495 (36%) were treated with MVA and 865 (64%) were treated using sharp curettage. Eighty-six percent of all patients (MVA and sharp curettage) received contraceptive counseling and 16% left the facility with a method. In Nepal, from May 1995 to December 2000 there were a total of 6,763 PAC procedures at the Maternity Hospital. Forty-nine percent (3,368) of these cases were treated with MVA and 51% (3,394) were treated with sharp curettage. A total of 2,256 clients (33%) accepted a contraceptive method (Cobb et al., 2001). When vacuum aspiration is not available, PAC programs should therefore aim at improving the quality of PAC services and ensuring the delivery of the complete package of services with sharp curettage.

## I.1. SAFETY AND EFFICACY OF MANUAL VACUUM ASPIRATION AND SHARP CURETTAGE

To assess the safety and efficacy of VA and sharp curettage, a number of studies of incomplete abortions performed in developing countries were reviewed. The following were used as determinants of safety: blood loss, uterine perforation, cervical injury, and infection. Some of the studies considered pain a determinant of safety, but in the Panel's view, pain should be considered part of the quality of care rather than a safety determinant.

The determinant of "effectiveness" was "complete evacuation," i.e., no need for re-evacuation.

A number of studies were reviewed to assess the safety and efficacy of VA and sharp curettage, one of them being the Cochrane review, which was based on a systematic analysis of randomized controlled trials comparing sharp curettage with VA (Forna and Gulmezoglu, 2001). The Cochrane review comprised 25 studies, but only two (Tan et al., 1969; Verkuyl and Crowther, 1993) fulfilled the inclusion criterion of being a randomized controlled study and were used in the Cochrane analysis. These two studies had small study samples

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<sup>2</sup>While some of the literature cited in this paper uses the "dilatation and curettage," or "D&C," terminology, this paper will use "sharp curettage" throughout for the sake of consistency.

(193 in Tan et al., and 357 in Verkuyl and Crowther). Only one of the included studies evaluated blood loss, finding that VA was associated with statistically significantly less blood loss (-17 ml weighted mean difference, 95% confidence interval (CI) -24 to -10 ml) than sharp curettage (Verkuyl and Crowther, 1993). It may, however, be questioned whether the found difference in blood loss has any clinical significance. No difference was found regarding the need for re-evacuation. The remaining findings were not statistically significant. For VA versus sharp curettage, respectively, the results were as follows: uterine perforation, 0/227 versus 1/227 (RR: 0.32; 95% CI 0.01, 7.76); need for re-evacuation, 3/227 versus 2/236 (RR: 1.50; 95% CI 0.29, 7.83); incidence of sepsis, 2/138 versus 7/132 (RR: 0.27; 95% CI 0.06, 1.29); duration of bleeding after the procedure, -0.3 days weighted mean difference (95% CI -1.3 to 0.7 days).

In addition to the Cochrane review, pre- and post-intervention studies have found that sharp curettage was equally as safe and effective as VA for evacuation of incomplete abortion (Lukman and Pogharian, 1996; Mahomed, Healy, and Tandon, 1994).

Two studies summed up the results from a number of studies comparing sharp curettage with VA (Baird, Gringie, and Greenslade, 1995; Baird and Flinn, 2001). Hemorrhage was more frequent when sharp curettage was used for evacuation, possibly due to the fact that general anesthesia was mostly used for sharp curettage rather than for VA. It is recognized that general anesthesia causes relaxation of the uterus, which probably accounts for the increased bleeding associated with sharp curettage.

The safety of evacuation was associated with gestational age. The vast majority of the studies had accounted for this and attempted to assess and provide information on gestational age. Some studies relied on the woman's recall of her last menstrual period; others assessed the gestational week by bimanual palpitation; and others measured the length of the uterine cavity.

One study found that nausea and vomiting occurred more frequently when VA was used for evacuation, probably reflecting the fact that different types of analgesics were used for VA and sharp curettage (Kizza and Rogo, 1990).

The overall evidence from the studies the Panel reviewed points to little or no difference in safety between the evacuation techniques of sharp curettage and VA for PAC. Most studies did not assess whether differences in blood loss were due to the method of uterine evacuation or the method of anesthesia; however, the differences in reported blood loss are generally of little clinical significance. It is of further

importance to note that blood loss was defined differently in the studies reviewed. The following definitions were used: measured weighted mean difference between groups; hemoglobin (g/dl); duration of bleeding (days or weeks); bleeding based on clinical assessment (bloodstained discharge, some bleeding, excessive bleeding); and bleeding above 100 ml or 500 ml.

VA and sharp curettage appear to be equally effective in completely evacuating the uterus, a necessary step in the treatment of incomplete abortion. There was seldom a need for a re-evacuation with either technique. Our review did not include the emerging practice of medical evacuation.

It should be noted that studies showing that sharp curettage and VA are equally safe have assessed their safety and effectiveness only in tertiary hospitals, where well-trained and experienced persons perform the evacuation. It is anticipated that surgeons working in these settings are more experienced in performing sharp curettage than clinical officers or nurse-midwives working in more remote areas. In terms of scaling up PAC services using mid-level providers to cover rural areas, VA should be preferred since there is no documentation of the safety of sharp curettage performed by mid-level providers in a rural setting without easy access to an operating room. In addition, it is not general practice for midwives to perform sharp curettage. The Panel believes that there is a general consensus that sharp curettage will be less safe in the hands of mid-level providers, such as nurse-midwives working in rural settings, especially as perforation with a sharp instrument may cause serious injury. Therefore, establishing a precedent for nurse-midwives to practice sharp curettage may be problematic. Concurrence from the medical profession for mid-level providers to perform VA may be more readily accepted.

## **1.2. SHARP CURETTAGE**

One of the Panel's tasks was to assess whether sharp curettage can be performed safely without use of general anesthesia. Two of the reviewed studies show that sharp curettage can be performed safely without general anesthesia (De Jonge et al., 1994; Lukman and Pogharian, 1996). A randomized prospective clinical trial of 142 women with uncomplicated incomplete abortions compared evacuation with systemic analgesia (fentanyl and midazolam) in a treatment room (ward group) with evacuation under general anesthesia in the operating room (De Jonge et al., 1994). It found significantly less delay from admission to evacuation: 7 hours and 15 minutes for the ward group compared with 12 hours and 38 minutes for the operating room group.

The same study assessed pain associated with sharp curettage performed in an operating theatre under general anesthesia

and in the ward under systemic analgesia (De Jonge et al., 1994). It reported that the experience of pain was similar in the two groups. It is difficult, however, to base recommendations on a single study; more assessments are needed. Where no anesthesia or analgesia was used, sharp curettage was more painful than VA (Lukman and Pogharian, 1996).

Many low-income countries still rely on sharp curettage for treating incomplete abortion. To ensure high-quality care with sharp curettage (when VA is not available), periodic updating of skills would, whenever possible, be desirable, as with any other surgical intervention.

The safety of sharp curettage, as well as that of any other surgery, depends on the operator's skills and the physical condition of the patient. To ensure that sharp curettage is performed as safely as possible, providers should be trained in using gentle technique to avoid: 1) uterine perforation; 2) removing tissue deeper than the endometrium, which can cause scarring between the uterine walls (Asherman's syndrome); and 3) unnecessary pain for the woman (Rashbaum, 1977; experience of the Panel members). Gentle technique can allow lower doses of analgesic and anti-anxiety (anxiolytic) medications during the procedure. Training in performing sharp curettage with a patient under light sedation (low-dose analgesics and anxiolytics) may require new skills for gentle technique, patient communication, teamwork, and attention to the patient's level of anxiety and discomfort.

### **I.3. ANESTHESIA AND COMPLICATIONS/ MORBIDITY RELATED TO EMERGENCY TREATMENT**

A question raised in the scope of work for the Postabortion Care Technical Advisory Panel was whether general anesthesia, rather than the evacuation technique used for emergency treatment, was the cause of increased morbidity related to blood loss, which also results in prolonged hospital stay. Some of the studies found that general anesthesia was associated with higher rates of bleeding. This may be related to general anesthetic agents, such as the halogenated inhalation agents halothane, isoflurane, enflurane, and sevoflurane. These are known to relax uterine smooth muscle, thereby leading to uterine relaxation and increased uterine bleeding (Hardman et al., 2001).

Pain management skills are an essential part of PAC for client satisfaction, trust, counseling, safety, and reduced side effects of anesthetics. Training in pain relief is also necessary to ensure safety. Anesthesia has been associated with deaths attributable to minilaparotomy surgery, usually related to high doses of meperidine and poor monitoring of vital signs (Khairullah, Huber, and Gonzales, 1992).

There are several components to successful management of pain for sharp curettage, VA, and other outpatient surgery, such as minilaparotomy:

1. Providing respect, attention, and support
2. Creating a warm and friendly environment by all staff
3. Attending to levels of anxiety and discomfort and providing pain relief using analgesics, anti-anxiety medications, and local anesthetics as needed
4. Informing the woman what she will feel during the procedure
5. Performing surgery with gentle technique
6. Giving additional pain medication when appropriate on an individual basis, even though this may be difficult in low-resource settings

Four treatment components of pain management for outpatient treatment with sharp curettage or VA deserve special emphasis:

1. Nonsteroidal anti-inflammatory drugs, such as ibuprofen or naproxen, will reduce cramping and uterine pain during and after the procedure. These are given orally and are relatively inexpensive, though effectiveness may be modest.
2. Analgesia with narcotics, such as meperidine or fentanyl, may be given by intravenous, intramuscular, or oral routes, depending on the narcotic. Doctors and assistants must know safe dose limits, duration of action, and how to reverse the effects if the woman has respiratory depression. These may be given on an individualized basis when needed (Castleman and Mann, 2002; Rogo, 2004).
3. Anxiolytics, such as diazepam or midazolam, decrease anxiety and provide amnesia, though they do not reduce actual pain. Therefore they are typically used with narcotic analgesics. The woman's anxiety level should be assessed, and, when needed, the dose should be individualized. Safe upper limits, interaction with narcotics, and duration of action must be known by providers and reflected in practice.
4. Local anesthesia, such as lidocaine, may be infiltrated around the cervix (paracervical block) to reduce pain, especially if extensive cervical dilation is needed. Correct infiltration technique and adherence to maximum limits of drugs are necessary for safe use. There is reason to question the need for a paracervical block if the cervix is open with

an incomplete abortion.<sup>3</sup> If the paracervical block can be omitted for a majority of women without increasing pain, this would be an important advance for PAC outpatient services. This is an urgent topic for further study.

The reality in many low-resource settings is that the appropriate drugs are not available for every woman. Published and anecdotal reports confirm that sometimes no anesthesia is available or that only one or two drugs are present. Giving a paracervical block generally requires a long spinal needle or a needle extender, neither of which may be available. It is critical, therefore, that providers have a range of pain management options that they may use alone or in combination, and that the most effective and safest measures be known and practiced.

Successful outpatient sharp curettage services will use the above four treatments, together with the aforementioned components of effective pain management. In taking PAC services to the community level through mid-level providers, drugs such as ibuprofen may be one of the few options in rural areas. Good knowledge and adherence to sound protocols will help ensure safety and quality of care. Supporting evidence for this comes both from VA procedures where the cervix is closed and from minilaparotomy (De Jonge et al., 1994; Khairullah, Huber, and Gonzales, 1992; Tietze and Lewit, 1971). Finally, quality of care involves not only treating the woman's medical condition but also providing effective counseling to enable voluntary acceptance of a contraceptive method. This component of PAC can be better achieved when the woman is provided the above-mentioned elements of good-quality care.

#### **I.4. COST**

Studies have shown that treatment of women who have experienced incomplete abortion may absorb more than 50% of the budget allocated for obstetric and gynecologic health care (Johnson, Benson, and Bradley, 1993a). Furthermore, high costs of services may be a barrier to obtaining clinical services. Therefore, to address the problem of unsafe abortion, health facilities should offer safe and effective PAC services while minimizing the costs.

In all, 13 studies assessing cost and resource use were reviewed and discussed by the Panel. Most of the studies were operations research (OR) studies comparing pre- and

post-intervention costs. Two of the studies (Brambila et al., 1999; Koontz et al., 2003) provided information about mean gestational age in, respectively, sharp curettage and MVA groups. The studies relied on observation of small numbers of patients from arrival at to departure from the hospital and used the following determinants to measure costs for PAC patients: 1) cost for accessing the operating theatre (including general anesthesia when used); 2) hospital overhead and salary for health care providers; and 3) equipment (instruments, supplies, and family planning commodities). Due to the cost studies' small sample sizes, no statistical tests were performed.

Overall, the studies showed that switching from sharp curettage to MVA and at the same time reorganizing services for outpatient procedures reduced average length of stay and treatment cost (Benson and Huapaya, 2002; Billings, Del Poso, and Arévalo, 2003; Blumenthal and Remsburg, 1994; Brambila et al., 1999; Johnson et al., 1993b). Costs by type of method used for emergency treatment (sharp curettage, MVA) have often been compared. Other factors, however, particularly general anesthesia and the use of the operating theatre, are more likely to affect cost and increase hospital stay. This view is supported by the South African study showing less blood loss and reduced time with analgesia and sedation when sharp curettage procedures are taken out of the theatre for patients with uterine sizes equivalent to pregnancies up to 14 weeks gestation (De Jonge et al., 1994).

Some organizations have followed a flexible and incremental approach by first shifting sharp curettage to an outpatient setting and then introducing MVA. The cost of sharp curettage dropped from \$68.93 for inpatient procedures with general anesthesia to \$16.70 for sharp curettage in the outpatient department with local anesthesia. When MVA was then introduced in the outpatient department, the cost declined to \$16.30, a minimal additional savings (Guzman, Ferrando, and Tuesta, 1995; Huber and Bowles, 1999).

Outpatient surgery for other procedures, such as minilaparotomy for female sterilization, has been shown to be safe and acceptable (Khairullah, Huber, and Gonzales, 1992). Minilaparotomy generally requires more skills to perform on an outpatient basis than does sharp curettage. Most countries providing minilaparotomy for female sterilization have chosen outpatient services as the preferred standard of care.

Reorganization of the service seems to be the most critical issue in cost reduction for PAC services. MVA as an outpatient service has been demonstrated to be more cost-effective than sharp curettage as an inpatient procedure. Reorganizing sharp curettage procedures as outpatient services can be expected to produce similar cost savings.

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<sup>3</sup>One randomized study found no benefit of a paracervical block for pain management when treating incomplete abortion (Gomez et al., 2004). There was no difference in pain based on observations during the treatment or as reported by women after the procedure. The injection of local analgesia is painful, and if it does not provide pain relief when evacuating an incomplete abortion with an open cervix, its use may be questioned in such cases.

## 2. POSTABORTION CONTRACEPTIVE SERVICES

Despite the compelling logic and evidence that providing postabortion contraception prevents future unplanned pregnancies and repeat abortions, this component remains one of the weakest parts of PAC services. This was seen in USAID's 2001 global PAC evaluation and in site visits to PAC programs by USAID staff in 2005 and 2006. In 2000, service statistics from five service delivery sites in Bolivia showed a total of 1,593 PAC cases. Of this number, 775 (49%) were treated with MVA and 818 (51%) received sharp curettage treatment. Of the 775 women who had MVA, 565 (73%) received contraceptive counseling with 6% accepting a contraceptive method. Of the 818 sharp curettage cases, 45 (6%) received contraceptive counseling, and 12 women accepted a contraceptive method. In 2001 in Bolivia, there were 1,503 PAC cases in five sites; 1,008 were treated with MVA and 495 were treated with sharp curettage. Of the women treated with MVA, 783 (78%) cases received contraceptive counseling, and 135 (17%) accepted a contraceptive method. Of the 495 women treated with sharp curettage, 231 (47%) received contraceptive counseling, and 19 (8%) left with a method (Cobb et al., 2001). As further noted in the evaluation, many PAC programs had set up new rooms for MVA, while sharp curettage was often performed in the main operating theater, thus creating a physical division of these services. This served to reinforce the neglect of women being treated with sharp curettage within the PAC model.

In a study in Mexico, there were no significant differences in increased contraceptive use between women who were treated with sharp curettage and women treated with MVA when the PAC model was employed for both (Billings, Fuentes, and Perez-Cuevas, 2003b). In fact, for two hospitals using sharp curettage, 78% of women received a method of contraception compared with 64% of women treated with MVA in two other hospitals. Where the PAC model was not employed with sharp curettage, only 40% received a method.

In USAID's site visits to Cambodia and Senegal, contraceptive counseling and service delivery were found to be weak, and postabortion contraception was not well integrated into emergency treatment (USAID trip report, September 2006). It was recommended that services be reorganized to help ensure that contraceptive counseling and service delivery is provided at the time of emergency treatment (USAID trip report, May 2005).

Emergency treatment often overshadows the other components of PAC, and it is the Panel's opinion that greater emphasis should be placed on preventing repeat abortion.

This viewpoint was also highlighted in the global evaluation of USAID's postabortion program and outcomes of USAID site visits in 2005 and 2006 to PAC programs in Cambodia and Senegal, which note that the second component of PAC – contraceptive counseling and services – needs to be strengthened. When aiming to scale up PAC programs, the importance of all three components of PAC (emergency treatment, contraceptive counseling and service delivery, and community awareness and mobilization) has to be acknowledged. It is of particular importance that all women are offered postabortion contraceptive services, regardless of the emergency treatment method provided (Cobb et al., 2001). It is the Panel's view that postabortion contraceptive services should be initiated at the time of emergency treatment and then strengthened by a one-month follow-up visit.

### 2.1. POSTABORTION CONTRACEPTIVE SERVICES AT THE TIME OF EMERGENCY TREATMENT

Important evidence demonstrating that it is possible to increase contraceptive acceptance among women who have experienced incomplete abortion has been provided by OR studies from Burkina Faso (Ministry of Health, 1998), El Salvador (Koontz et al., 2003), Kenya (Solo et al., 1999), Mexico (Billings, Fuentes, and Perez-Cuevas, 2003; Langer et al., 2002; Langer et al., 2005), Peru (Benson and Huapaya, 2002), Russia (Savelieva et al., 2003), and Senegal (Dabash, 2003). These studies have all shown that contraception is well accepted when postabortion contraceptive services are implemented as part of emergency treatment.

The service delivery model that is applied influences women's acceptance of postabortion contraception. An OR study of postabortion clients in Kenya found that 75% chose a contraceptive method when they were provided on the ward, while only 41% obtained a method when asked to visit a separate site within the same hospital after discharge (Solo et al., 1999). The qualifications of the counselor also affect postabortion clients' contraceptive use. A Tanzanian study from Dar es Salaam showed that 24% of the women who were counseled by general ward staff returned for counseling and new supplies after one month, whereas 51% of the women did the same when counseled on the ward by well-trained contraceptive counselors (Rasch et al., 2004a). The quality of care, including physical surroundings and client-provider interaction, is likely to influence the likelihood of the women returning for follow-up. Hence, a parallel study conducted in a rural Tanzanian setting in a less crowded and busy ward showed that 91% of the women who were counseled by well-trained nurses returned for three months

follow-up (Rasch, Yambesi, and Kipingili, 2007). These findings suggest that higher contraceptive acceptance rates are likely to be achieved if the service is provided on the ward by well-trained contraceptive counselors.

One of the concerns in postabortion contraceptive service delivery is women's medium- and long-term contraceptive use. The effectiveness of postabortion contraceptive services has been documented in a Zimbabwean study that revealed that women who received ward-based postabortion family planning services had higher contraceptive use for at least one year after hospital discharge, as well as fewer unplanned pregnancies and abortions (Johnson et al., 2002). An OR study in Perm, Russia, found that the introduction of postabortion family planning service delivery, with training in counseling skills and job aids for providers, led to increased use of modern contraceptive methods at 12 months postabortion (Savelieva et al., 2003). Similar findings have been reported from Tanzania, where 90% of the women accepted postabortion contraception; 86% of these women were still using contraception one to six months after discharge (Rasch et al., 2004b).

There is concern about the sustainability of postabortion contraceptive services. A Peruvian study compared postabortion contraception acceptance rates when the PAC program was initiated with acceptance rates three years later. It found that after three years more postabortion women left the hospital with a contraceptive method than during the initial phase (Benson and Huapaya, 2002). The authors concluded that major factors contributing to the sustainability of postabortion contraceptive services were strong political leadership, both within and outside the hospital; continuous supplies; and sufficient staff.

It is the Panel's opinion that a systematic approach is needed to better ensure sustainability of postabortion contraceptive service delivery. Services should be delivered on a routine basis, and protocols and forms should be used to help the health staff providing postabortion contraceptive services and to enhance supervision. Furthermore, in the provision of postabortion contraceptive services, it is essential that the services be organized in such a way that they are voluntary and acceptable to the woman. Whenever possible, counseling and decisionmaking for postabortion contraception should be initiated before the evacuation procedure, especially for women who might want an intrauterine device. Written

information about postabortion complications and contraceptive methods should always be provided because verbal instruction may not be remembered due to amnesia caused by pain-relieving medication and physical and emotional stress. Written information can also strengthen male partner understanding and support. Ideally, the counseling should be performed by well-trained staff and address women's different reproductive intentions. If feasible and appropriate (based on level of epidemic and on human resources), voluntary HIV counseling and testing should be offered as part of postabortion contraceptive counseling. Such an approach is supported by a Tanzanian study that found that offering voluntary HIV counseling and testing to PAC clients led to acceptance of testing and increased condom acceptance among those being tested (Rasch, Yambesi, and Massawe, 2006).

## **2.2. POSTABORTION CONTRACEPTION FOLLOW-UP VISIT**

It is anticipated that postabortion contraceptive use may be supported and strengthened through a follow-up visit, which can take place at either the hospital or a more peripheral health facility, according to the woman's preference. In this regard, it should be acknowledged that postabortion clients are often reluctant to comply with follow-up services (Johnson et al., 2002; Rasch et al., 2004a). This problem may be addressed, in part, if the woman is provided with an appointment card that states her chosen method and the date and place of the follow-up visit. It is the Panel's opinion that the follow-up visit should be scheduled one month after the first visit so that the woman has gained experience with the contraceptive method provided.

The follow-up visit may further serve as an opportunity for involving the male partner in the contraceptive counseling. An Egyptian study documented that such involvement increased contraceptive use among postabortion women (Abdel-Tawab et al., 1999). It has further been shown that male partners involved in unsafe abortion often have a positive attitude toward such involvement (Rasch and Lyaruu, 2005). Male partner involvement throughout the continuum of PAC services should be encouraged whenever the woman feels this will be beneficial.

Physical examinations during routine follow-up visits should be reserved for those who have an indication.

### 3. COMMUNITY INVOLVEMENT

In many low-income settings, PAC is difficult to access, and women often have to travel a considerable distance to reach services. This requires time and money and may prevent women from accessing services. To address this problem, the complete PAC model should be expanded to the community through nurses and midwives. Although work with the community has not been a regular part of PAC programs, a few studies have attempted to observe PAC at the community level. In an OR study performed in Senegal, district health clinicians were trained in PAC, including VA, counseling, and postabortion contraceptive service delivery (PRIME Voices, 2003). Having additional trained PAC providers enabled the district health center to offer 24-hour access to VA services along with contraceptive services to help women prevent future unintended pregnancies. As part of the intervention, contraceptive services and selected PAC activities were expanded to rural health huts and health posts, and staff at these facilities were instructed in referring postabortion clients in need of emergency treatment to the health centers (PRIME Voices, 2003).

Even where facilities with PAC capabilities are easily accessible, women may not use them for a variety of reasons: women's status in the immediate and extended family; perceived severity of the complication; societal expectations; culture and traditions; dissatisfaction with staff attitudes and performance; and the law. Effective community awareness and mobilization are needed to address these obstacles. Community awareness can be achieved by involving community-based organizations, such as traditional birth attendants, women's groups, male leadership, and religious leaders, in discussions about the need to prevent unwanted pregnancies, the dangers of unsafe abortion, and the need for prompt referral and appropriate care following an unsafe abortion. In 2004, Pathfinder/CATALYST-Bolivia developed and initiated a model for community mobilization related to PAC (Tsuyuki, 2005a; Tsuyuki, 2005b). The model was developed and implemented in four different steps: 1) identification and prioritization of needs; 2) community action plan; 3) implementation of action plans; and 4) participatory evaluation. The community was involved

with each step of the model. This approach led to community empowerment and greater community responsibility for the process and the outcome.

After designing the model for Bolivia, CATALYST replicated the model in similar activities in Egypt, Peru, and Kenya. However, the experiences in the three countries differed significantly. In Bolivia, the community mobilization model was implemented in two large urban areas and involved a broad spectrum of community members. In Egypt, the project mobilized a wide variety of community leaders to disseminate information about seeking immediate medical care when complications of spontaneous abortion occur. In Peru, the project partnered with a local woman's organization and the local maternity hospital (USAID/CATALYST, 2006). In all countries, the activities resulted in increased community awareness about unintended pregnancies and complications of spontaneous and induced abortions and how to prevent these problems. In Bolivia, pre- and post-tests of 1,217 community members showed a significant increase in knowledge of types of contraceptive methods (88% to 94%) and increase in use of contraception at last sexual intercourse (46% to 54%) (CATALYST, 2004). In Kenya, problems identified by community members included lack of information and misconceptions about pregnancy, bleeding during pregnancy, and family planning; lack of knowledge and use of local health facilities and the family planning/reproductive health services they offered; lack of male involvement in reproductive health and family planning matters; and peer pressure leading to unplanned pregnancy (Joseph, 2006).

In addition to the aforementioned community mobilization activities, community education to increase awareness of abortion complications and of the need for contraceptive services to reduce unwanted pregnancies is an essential aspect of community involvement.

Finally, involvement of men in promoting community support for access to PAC and contraceptive services may prove to be beneficial.

## 4. PROPOSED DEFINITION OF POSTABORTION CARE

The Panel was asked to review and respond to a proposed draft definition for PAC (USAID, 2005a). We found the definition too long and complicated. It is the Panel's opinion that a definition should be as clear and as short as possible. It should be stressed that PAC is a package of services that should be implemented in a systematic way. Systematic, standardized implementation is crucial for the sustainability of PAC initiatives.

As for the components, a model that includes eight components of care, including STI evaluation and treatment and HIV voluntary counseling and testing, may seem too cumbersome to implement and thus serve as a barrier to PAC scale-up. We support the three-component model suggested in the 2004 USAID Postabortion Care Strategy (USAID, 2004), with emphasis on the following components: emergency treatment; postabortion contraceptive counseling and service delivery; and community empowerment through community awareness and mobilization.

In such a model, emergency treatment will obviously comprise pre- and post-procedure counseling, and postabortion contraceptive counseling will include counseling regarding return to fertility. We find that STI evaluation and treatment and voluntary HIV counseling and testing should be optional, depending on human resources and prevalence of the diseases in different regions. These services may be valuable in some

settings, although the Panel recognizes that there are differing views regarding the potential for a significant health benefit.

In the draft definition reviewed by the Panel, community involvement was left out. The Panel believes that community involvement is crucial, since it may increase women's ongoing use of contraception and may increase awareness of the need for PAC services. This assumption is supported by studies from Bolivia that demonstrated that community involvement led to an increased knowledge of contraceptive methods and also increased the availability of contraception and PAC services (Salvador-Davilla et al., 2005; Tsuyuki, 2005b)

The Panel suggests the following definition:

Postabortion care is a **package of services** provided to women who have had an incomplete abortion after a spontaneous or an induced abortion. PAC comprises the following three key components that should be implemented in a **systematic way**:

1. Emergency treatment
2. Postabortion contraceptive counseling and services
3. Community involvement for early recognition and management of abortion complications and to support and strengthen ongoing contraceptive use

## 5. PERTINENT FINDINGS NOT REFLECTED IN THE SCOPE OF WORK

### 5.1. INTERPREGNANCY INTERVALS

New evidence has emerged on the importance of interpregnancy intervals after abortion on subsequent maternal and perinatal health. The evidence comes from a large data set involving 258,108 women in Latin America whose pregnancies ended either in live birth, miscarriage, or induced abortion (Conde-Agudelo et al., 2005). After a miscarriage or induced abortion, the recommended minimum interval to the next pregnancy is at least six months in order to reduce risks of adverse maternal and perinatal outcomes. These risks include: 1) maternal anemia; 2) premature rupture of membranes; 3) low and very low birthweight; and 4) preterm and very preterm delivery.

This evidence suggests that all women whose pregnancy ended in miscarriage or abortion should be offered counseling and voluntary contraceptive services before leaving the clinic. This practice would be beneficial for organizing services and to avoid the implications of distinguishing women whose last pregnancy was wanted or unwanted. Providers can focus on the less sensitive area of determining the woman's reproductive intentions with regard to a next pregnancy separate from whether the last pregnancy was wanted or not.

The maternal and perinatal health benefits of six months or more spacing between an abortion and the next pregnancy

are parallel with evidence for good maternal and perinatal health outcomes of waiting at least 24 months after a live birth before attempting the next pregnancy. This is recommended in order to reduce the risk of adverse maternal, perinatal, and infant outcomes. Therefore, voluntary contraceptive services are an important component of both postpartum care and PAC.

## 5.2. MISOPROSTOL FOR TREATMENT OF INCOMPLETE ABORTION

It was not part of the Panel's mandate to include misoprostol for treatment of incomplete abortion. It has to be acknowledged, however, that misoprostol can be a useful treatment for many women when other services are unavailable. Misoprostol produces cervical dilation and contraction of the uterus, and evidence shows that it effectively evacuates incomplete abortion. In a Vietnamese study, 95% of the

women who received oral misoprostol had a successful uterine evacuation without recourse to surgical backup, and nearly 60% of women completed their abortions on study day 3. The remaining women completed their abortions by study day 7 (Nguyen et al., 2005). Similar findings have been reported in a Ugandan study in which 96% of women who had an incomplete abortion had a successful uterine evacuation one to two weeks after receiving oral misoprostol (Weeks et al., 2005). Women on high doses of misoprostol are at increased risk of pyrexia, nausea, vomiting, diarrhea, and shivering (Ayres-de-Campos et al., 2000; Chung et al., 1995; Pang et al., 2001). Some authorities propose a role for misoprostol in pretreatment before evacuating the uterus with sharp curettage or VA. However, this potential use was not reviewed by the Panel, and the appropriate role of misoprostol in PAC is the subject of ongoing research. The evidence from these studies is awaited.

# 6. FURTHER COLLABORATION WITH FIGO, ICM, AND WHO FOR THE SCALE-UP OF POSTABORTION CARE PROGRAMS

To make PAC effective and sustainable, FIGO, ICM, and WHO could be instrumental in setting policy guidelines for the systematic approach to implementing PAC services and providing leadership. This would suggest a new working group that will involve USAID's collaboration on PAC initiatives jointly with these organizations. For strengthening the postabortion contraceptive component of PAC, a working group including FIGO, ICM, WHO, and USAID will be an important means for repositioning family planning services and expanding PAC implementation. The partnership could start with consultations between the USAID PAC Working Group, FIGO, ICM, and WHO to produce a **consensus statement** endorsing the proposed definition of PAC, the key programmatic elements to scale up PAC programs worldwide, and the identification and promotion of best practices in PAC.

A focus on health outcomes in women's care will facilitate such a partnership. Voluntary postpartum contraception should be a routine part of good maternal care to achieve optimal birth spacing for improved child survival and maternal health. Likewise, the same providers in the same facilities – from hospitals to private midwifery practices – should provide PAC, including voluntary postabortion contraception to avert repeat unsafe abortions and to

improve the next pregnancy outcome for women who wanted the last pregnancy. These two initiatives would make voluntary contraceptive counseling and services a standard part of care for all women who have delivered or have had an abortion.

Reorganizing services to provide both voluntary postpartum and postabortion contraception can have synergies benefiting each effort through attitude and value changes as well as efficient use of health resources. FIGO, ICM, and WHO will be good partners to advocate for improved health outcomes and to change professional guidelines and practices.

A wide expansion of PAC services in settings where either sharp curettage or VA is used could also facilitate greater introduction of VA techniques and equipment in the future. There are already demonstrations of a logical progression of sharp curettage being taken from an inpatient to an outpatient procedure, followed by the introduction of outpatient VA. Quality of care for emergency treatment and voluntary postabortion contraception could be further advanced with VA by building on the scale-up of PAC services in all maternity care settings.

## 7. RECOMMENDATIONS FOR EXPANDING POSTABORTION CARE

### 7.1. EMERGENCY TREATMENT

- PAC programs should aim at improving the quality of service regardless of whether a woman is treated with VA or sharp curettage.
- Depending on the local environment and availability of supplies, use of VA should be encouraged.
- In terms of scaling up PAC service to cover rural areas involving mid-level providers, in the Panel's judgment, VA would be preferred.
- In countries where sharp curettage is used, high quality of service should be ensured by adequate training; periodic updating of skills is desirable, as with any other surgical intervention.
- Training should include a range of pain management options so that providers can flexibly adapt available agents and can individualize management of pain and anxiety while maintaining safety and effectiveness.
- Further studies should be carried out to verify the current reports suggesting sharp curettage can be a safe outpatient procedure.

### 7.2. POSTABORTION CONTRACEPTIVE SERVICES

- Voluntary postabortion contraceptive counseling and services should be universally offered before the woman leaves the facility, irrespective of whether VA or sharp curettage was used for emergency treatment.
- Every woman should be informed about the rapid return of fertility following abortion.
- Regular supplies of a range of contraceptive commodities should be ensured.
- A systematic approach is necessary in which services are delivered as a matter of standard policy at each facility and providers are expected to follow this norm.
- Health care providers' skills in terms of contraceptive counseling and service delivery should be improved.
- Protocols and forms should be implemented because they will help the health staff who provide postabortion counseling and contraceptive service and will make supervision more practical.

- Written information about postabortion complications and contraceptive methods must be provided, considering that stress and analgesic medications can make it difficult for the woman to remember counseling and instructions.
- Women receiving PAC should be provided with an appointment card that states the woman's chosen method and the date and place of the follow-up visit in order to enhance ongoing contraceptive use.
- If feasible and appropriate (based on the level of HIV epidemic and on human resources), voluntary HIV counseling and testing should be offered as part of PAC.
- A follow-up visit should be scheduled one month after discharge to reinforce and strengthen contraceptive counseling and ongoing use.
- The male partner should be involved in contraceptive counseling and support of the woman whenever this is possible and will be beneficial.
- Physical examination at the follow-up visit should be reserved for those who have an indication.

### 7.3. COMMUNITY INVOLVEMENT

- Expansion of the complete PAC model to the community through nurses and midwives is necessary.
- Community education is needed to increase awareness of abortion complications and the need for contraceptive services to reduce unwanted pregnancies.
- Advocacy at the community level is crucial for timely utilization of health services, including contraceptive and other reproductive health services.
- Involvement of men in promoting community support for access to PAC and contraceptive services should be encouraged.

### 7.4 OTHER RECOMMENDATIONS

- A USAID/FIGO/ICM/WHO PAC partnership should be established to systematize and standardize global PAC policies and to identify and promote best practices in the implementation of PAC programs. This should start with formal consultations between the USAID PAC Working Group, FIGO, ICM, and WHO to produce a consensus statement, including the proposed definition of PAC and key programmatic elements to scale up PAC programs worldwide.



# APPENDIX

## Questions for the PAC Technical Advisory Panel

Based upon your review of the enclosed research articles, PAC strategy paper, and Executive Summary of the 2001 Global Evaluation of USAID's Postabortion Care Program, please respond to the following questions:

### Safety and efficacy

1. What is the safety and efficacy of the following interventions for emergency treatment? (If any other methods that are not included are considered important, please identify and evaluate.)

- MVA
- Electric vacuum aspiration
- Sharp curettage
- Digital curettage
- Blunt curettage

2. What determinants are used in the articles to state that an intervention is safe? What determinants are used in the articles to determine if an intervention is effective? What is the difference between safety and effectiveness?

3. Was the range of gestational age of the woman upon admission consistent throughout all the studies in which safety of MVA and sharp curettage was compared?

4. What is the origin of the pool of studies re: safety of MVA?

### Cost

In the research compendium, there is a summary statement that states that "Use of MVA for PAC can reduce the length of hospital stay, as compared to sharp curettage." However, in review of some of the statements, other factors such as "reorganization of services" (Ministry of Health, Burkina Faso, 1998; Billings, Fuentes, and Perez-Cuevas, 2003); "associated changes in protocol" (Koontz et al., 2003; Centre de Formation et de Recherche en Sante de la Reproduction and Clinique Gynecologique et Obstetricale CHU A. le Dantec., 1998); and "improved service delivery model" (Langer et al., 2002 and Brambila et al., 1999) are stated as intervention activities. Based upon your review of the enclosed articles, please respond to the following questions.

1. What are the determinants for increased hospital stay and costs for PAC patients? What other factors other than method of emergency treatment (sharp curettage, MVA,

EVA, etc.) may affect increased hospital stay, hemorrhage, uterine perforation (e.g., maternal condition upon admission to facility for PAC services, type of anesthesia/analgesia used, etc.)?

2. Was the range of gestational age of the women upon admission consistent throughout all the studies in which cost of MVA and sharp curettage was compared?

3. Is the reduction in hospital stay, hospital costs, and uptake in family planning usage due to a change in hospital policy and procedures (rearrangement of services/policies re: use of general anesthesia, etc.) or due to the method of emergency treatment (MVA vs. sharp curettage)?

4. What is the origin for the pool of studies re: cost of postabortion care services using MVA for emergency treatment?

### Sharp curettage

1. Can sharp curettage safely be performed without use of general anesthesia?

2. Is the quality of care (especially pain management) compromised when general anesthesia is not used for sharp curettage?

3. What are the standards for sharp curettage? Do providers' skills need to be tested/updated regularly to ensure high-quality sharp curettage when MVA provision is not possible? Should additional guidance be issued?

4. Can sharp curettage be promoted as a safe and effective means of emergency treatment for postabortion care? What factors are needed for this to ensure safety and effectiveness?

### Anesthesia and complications/morbidity related to emergency treatment

1. Is general anesthesia rather than the technology used for emergency treatment (sharp curettage or vacuum aspiration) the cause of increased morbidity related to blood loss, need for blood transfusion, etc., which results in prolonged hospital stay?

### Other findings

Please note any other pertinent findings that are not reflected in the above questions that would be important knowledge for the furtherance of PAC programs.

## Two-visit implementation

1. Please review the attached draft for a two-visit model for postabortion care and provide your comments.

## Definition of postabortion care

1. Most recently, the USAID PAC Working Group has devised an official definition of postabortion care services

based on findings of USAID's 2001 global evaluation of PAC programs and findings noted in the draft PAC Research Compendium. Is the newly devised definition of postabortion care an accurate reflection of USAID's core components of postabortion care? Does it adequately define postabortion care services? If not, please recommend changes for the definition.

# BIBLIOGRAPHY

- Abdel-Tawab, N., Huntington, D., Hassan, E. O., Youssuf, H., & Ncayiyana, D. J. (1999). Effects of husband involvement on postabortion patients' recovery and use of contraception in Egypt. In D. Huntington & N. J. Piet-Pelon (Eds.), *Postabortion care: Lessons from operations research* (pp. 16-37). New York: Population Council.
- Alan Guttmacher Institute (1999). *Sharing responsibility: Women, society and abortion worldwide*. Washington D.C.: Alan Guttmacher Institute.
- Ayres-de-Campos, D. J., Teixeira-da-Silva, I. Campos, & Patricio, B. (2000). Vaginal misoprostol in the management of first trimester missed abortions. *International Journal of Gynecology and Obstetrics*, 71, 53-57.
- Baird, T. & Flinn, S. (2001). *MVA Manual Vacuum Aspiration: Expanding Women's Access to Safe Abortion Services*. Carrboro, N.C.: Ipas.
- Baird, T., Gringie, R., & Greenslade, F. (1995). *MVA in the treatment of incomplete abortion: Clinical and programmatic experience*. Carrboro, N.C.: Ipas.
- Benson, J. & Huapaya, V. (2002). *Sustainability of postabortion care in Peru*. Washington, D.C.: Population Council.
- Billings, D. L., Del Poso, E., & Arévalo, H. (2003). *Testing a model for the delivery of emergency obstetric care and family planning services in the Bolivian Public Health System*. Carrboro, N.C.: Ipas.
- Billings, D. L., Fuentes, V. J., & Perez-Cuevas, R. (2003). Comparing the quality of three models of postabortion care in public hospitals in Mexico City. *Int.Fam.Plan. Perspect.*, 29 (3), 112-120.
- Blumenthal, P. D. & Remsburg, R. E. (1994). A time and cost analysis of the management of incomplete abortion with manual vacuum aspiration. *Int.J.Gynaecol.Obstet.*, 45 (3), 261-267.
- Brambila, C., Langer, A., García-Barrios, C., & Heimburger, A. (1999). Estimating the costs of postabortion services at Dr. Aurelio Valdivieso General Hospital, Oaxaca, Mexico. In D. Huntington & N. J. Piet-Pelon (Eds.), *Postabortion care: Lessons from operations research* (pp. 108-124). New York: Population Council.
- Castleman, L. & Mann, V. (2002). *Manual vacuum aspiration (MVA) for uterine evacuation: Pain management*. Chapel Hill, N.C.: Ipas.
- CATALYST (2004). PAC compilation document. Washington, D.C.: CATALYST.
- Centers for Disease Control. (1986). *Epidemiologic notes and reports: Maternal deaths associated with barbiturate anesthetics – New York City*.
- Chung, T., Cheung, L., Leung, T., Haines C., & Chang, A. (1995). Misoprostol in the management of spontaneous abortion. *British Journal of Obstetrics and Gynecology*, 102, 832-835.
- Cobb, L., Putney, P., Rochat, R., Solo, J., et al. (2001). *Global evaluation of USAID's postabortion care program*. Washington, D.C.: Population Technical Assistance Project (POPTECH Publication Number 2001-024-007).
- Conde-Agudelo, A., Belizan, J. M., Breman, R., Brockman, S. C., & Rosas-Bermudez, A. (2005). Effect of the interpregnancy interval after an abortion on maternal and perinatal health in Latin America. *Int.J.Gynaecol.Obstet.*, 89, Suppl 1, S34-S40.

- Dabash, R. (2003). Taking postabortion care services where they are needed: *An operations research project testing PAC expansion in rural Senegal: Final report*. New York: EngenderHealth.
- De Jonge, E. T., Pattinson, R. C., Makin, J. D., & Venter, C. P. (1994). Is ward evacuation for uncomplicated incomplete abortion under systemic analgesia safe and effective? A randomized clinical trial. *S.Afr.Med.J.*, 84 (8), Pt 1, 481-483.
- Forna, F. & Gulmezoglu, A. M. (2001). Surgical procedures to evacuate incomplete abortion. *Cochrane.Database.Syst.Rev.1*, CD001993.
- Gebreselassie, H., Gallo, M., Monyo, A., & Jonson, R. (2005). The magnitude of abortion complications in Kenya. *BJOG: An International Journal of Obstetrics and Gynecology*, 112, 1229-1235.
- Gomez, P. I., Gaitan, H., Nova, C., & Paradas, A. (2004). Paracervical block in incomplete abortion using manual vacuum aspiration: Randomized clinical trial. *Obstet. Gynecol.*, 103 (5) Pt 1, 943-951.
- Greenslade, F., Leonard, A., Benson, J., Winkler, J., & Henderson, V. (1993). *Manual vacuum aspiration: A summary of clinical and programmatic experience worldwide*. Carrboro, N.C.: Ipas.
- Grimes, D. A., Schulz, K. F., Cates, W., Jr., & Tyler, C. W., Jr. (1979). Local versus general anesthesia: Which is safer for performing suction curettage abortions? *Am.J.Obstet. Gynecol.*, 135 (8), 1030-1035.
- Grimes, D., Schulz, K., Cates, J. W., & Tyler, C. (1977). The Joint Program for the Study of Abortion/CDC: A preliminary report. In W. Hern & B. Andrikopoulos (Eds.), *Abortion in the Seventies*. New York: National Abortion Federation.
- Guzman, A., Ferrando, D., & Tuesta, L. (1995). *Treatment of incomplete abortion: Manual vacuum aspiration versus curettage in the Maternal Perinatal Institute in Lima, Peru*. Pathfinder International, Latin America South Office.
- Hardman J. G., Limbird L. E., & Gilman A. G. (2001). *The Pharmacological Basis of Therapeutics*. 10th edition. Chapter 14. New York: McGraw-Hill Medical Publishing.
- Huber, D. & Bowles, E. (1999). Postabortion care to avert future abortions. In A. Ghosh, D. Lewinson, & R. L. Enfriqueto (Eds.), *Workshop Proceedings 20-21 May, 1999: Issues in establishing postabortion care services in low-resource settings*. Baltimore: JHPIEGO Corporation.
- International Conference on Population and Development (ICPD). (1994). *Programme of Action*. Cairo: ICPD.
- Johnson, B. R., Benson, J., & Bradley, J. (1993a). *Costs of alternative treatments for incomplete abortion: World Bank Working Paper*. Washington, D.C.: World Bank. Cited in: Billings, D. L. & Benson, J. (1993). Postabortion care in Latin America: Policy and service recommendations from a decade of operations research. *Health Policy Plan.*, 20 (3), 158-166.
- Johnson, B. R., Benson, J., Bradley, J., & Ordonez, A. (1993b). Costs and resource utilization for the treatment of incomplete abortion in Kenya and Mexico. *Soc.Sci. Med.*, 36 (11), 1443-1453.
- Johnson, B. R., Ndhlovu, S., Farr, S. L., & Chipato, T. (2002). Reducing unplanned pregnancy and abortion in Zimbabwe through postabortion contraception. *Stud.Fam. Plann.*, 33 (2), 195-202.
- Joseph, M. (2006). Community Mobilization for Postabortion Care in Kenya. Presentation to USAID PAC Working Group, June 2006.
- Khairullah, Z., Huber, D. H., & Gonzales, B. (1992). Declining mortality in international sterilization services. *Int.J.Gynaecol.Obstet.*, 39 (1), 41-50.
- Kizza, A. P. & Rogo, K. O. (1990). Assessment of the manual vacuum aspiration (MVA) equipment in the management of incomplete abortion. *East Afr.Med.J.*, 67 (11), 812-822.
- Koontz, S. L., de Molina, P. O., Leon, K., & Foster-Rosales, A. (2003). Treating incomplete abortion in El Salvador: cost savings with manual vacuum aspiration. *Contraception*, 68 (5), 345-351.
- Langer, A., García-Barrios, C., Heimbürger, A., Campero, L., Stein, K., Winikoff, B., & Barahona V. (2005). Improving postabortion care with limited resources in a public hospital in Oaxaca, Mexico. In D. Huntington & N. J. Piet-Pelon (Eds.), *Postabortion care: Lessons from operations research* (pp. 80-105). New York: Population Council.

- Langer, A., Heimburger, A., García-Barrios, C., & Winikoff, B. (2002). Improving postabortion care in a public hospital in Mexico. In N. Haberland & D. Measham (Eds.), *Responding to Cairo: Case studies of changing practice in reproductive health and family planning* (pp. 236-256). New York: Population Council.
- Lukman, H. Y. & Pogharian, D. (1996). Management of incomplete abortion with manual vacuum aspiration in comparison to sharp metallic curette in an Ethiopian setting. *East Afr.Med.J.*, 73 (9), 598-603.
- Mahomed, K., Healy, J., & Tandon, S. (1994). A comparison of manual vacuum aspiration (MVA) and sharp curettage in the management of incomplete abortion. *Int.J.Gynaecol.Obstet.*, 46 (1), 27-32.
- Marston, C. & Cleland, J. (2003). Relationships between contraception and abortion: A review of the evidence. *Int.Fam.Plan.Perspect.*, 29 (1), 6-13. Cited in Gillespie, D. (2004). Whatever happened to family planning and, for that matter, reproductive health? *Int.Fam.Plan.Perspect.*, 30 (1).
- Ministry of Health, Burkina Faso (1998). *Introduction of emergency medical treatment and family planning services for women with complications from abortion in Burkina Faso*. Nairobi: Population Council.
- Nguyen, T. N., Blum, J., Durocher, J., Quan, T. T., & Winikoff, B. (2005). A randomized controlled study comparing 600 versus 1200 microg oral misoprostol for medical management of incomplete abortion. *Contraception*, 72 (6), 438-442.
- Pang, M., Lee, T., & Chung, T. (2001). Incomplete miscarriage: A randomized controlled trial comparing oral with vaginal misoprostol for medical evacuation. *Human Reproduction* 16 (11): 2283-2287.
- Phee, J. M. (2005). *Audit of USAID/Bangladesh's nongovernmental organization (NGO) service delivery program* (Audit Report No. 5-388-05-004-P). Manila, Philippines.
- Prata, N., Mbaruku, G., Campbell, M., Potts, M., & Vahidnia, F. (2005). Controlling postpartum hemorrhage after home births in Tanzania. *Int.J.Gynaecol.Obstet.*, 90 (1), 51-55.
- PRIME Voices. (2003). *Senegal: Building a model for community-level postabortion care*. <http://www.prime2.org/prime2/voice/home/457184.html>.
- Rasch, V. & Lyaruu, M. (2005). Unsafe abortion in Tanzania and the need for involving men in postabortion contraceptive counseling. *Stud.Fam.Plann.*, 36 (4), 301-310.
- Rasch, V., Massawe, S., Mchomvu, Y., Mkamba, M., & Bergstrom, S. (2004a). A longitudinal study on different models of postabortion care in Tanzania. *Acta Obstet. Gynecol.Scand.*, 83 (6), 570-575.
- Rasch, V., Massawe, S., Yambesi, F., & Bergstrom, S. (2004b). Acceptance of contraceptives among women who had an unsafe abortion in Dar es Salaam. *Trop.Med.Int. Health*, 9 (3), 399-405.
- Rasch, V., Yambesi, F., & Kipingili, R. (2007). Acceptance and use of the female condom among women with incomplete abortion in rural Tanzania. *Contraception*, 75 (1), 66-70.
- Rasch, V., Yambesi, F., & Massawe, S. (2006). Post-abortion care and voluntary HIV counselling and testing – an example of integrating HIV prevention into reproductive health services. *Trop.Med.Int.Health*, 11 (5), 697-704.
- Rashbaum, W. (1977). Discussion: Medical aspects of abortion. In W. M. Hern & B. Andrikopoulos (Eds.), *Abortion in the Seventies* (48). New York: National Abortion Federation.
- Rogo, K. (2004). Improving technologies to reduce abortion-related morbidity and mortality. *Int.J.Gynaecol.Obstet.*, 85 (Suppl 1), S73-S82.
- Ross, J. & Stover, J. (2002). *Trends and issues affecting service delivery over the next decade*. Washington, D.C.: The POLICY Project.
- Salvador-Davilla, G., Guachalla, C. F., Bushley, D. R., Hammer, P. J., del Carmen Monasterios, M., & Tsuyuki, K. (2005). *Community mobilization around postabortion care in Bolivia: A model for implementation*. Abstract #113299, American Public Health Association, 133rd Annual Meeting and Exposition, December 10-14, 2005, Philadelphia, Pa.
- Savelieva, I., Pile, J. M., Sacci, I., & Loganathan, R. (2003). *Postabortion family planning operations research study in Perm, Russia* (full report). Washington, D.C.: Frontiers.

- Solo, J., Billings, D. L., oo-Obunga, C., Ominde, A., & Makumi, M. (1999). Creating linkages between incomplete abortion treatment and family planning services in Kenya. *Stud.Fam.Plann.*, 30 (1), 17-27.
- Tan, P., Ratnam, S., & Quek, S. (1969). Vacuum aspiration in the treatment of incomplete abortion. *J.Obstet. Gynaecol.Br.Commonw.*, 76 (9), 834-836.
- Thonneau, P., Fougeyrollas, B., Ducot, B., Boubilley, D., Dif, J., Lalande, M., & Soulat, C. (1998). Complications of abortion performed under local anesthesia. *Eur.J. Obstet. Gynecol.Reprod.Biol.*, 81 (1), 59-63.
- Thonneau, P., Goyaux, N., Goufodji, S., & Sundby, J. (2002). Abortion and maternal mortality in Africa. *N.Engl.J.Med.*, 347 (24), 1984-1985.
- Tietze, C. & Lewit, S. (1971). Legal abortions: early medical complications. An interim report of the Joint Program for the Study of Abortion. *Fam.Plann.Perspect.*, 3 (4):6-14.
- Tsuyuki, K. (2005a). *Community involvement and empowerment around postabortion care in Bolivia: PAC in action*. New York: PAC Consortium.
- Tsuyuki, K. (2005b). Implementing Bolivia's first PAC community mobilization model. *Michigan Fellows News*.
- USAID (2004). (Solo, J., Curtis, C., Malarcher, S., & Leonard, A.) *USAID postabortion care strategy*. Washington, D.C.: USAID.
- USAID (2005a). (Curtis, C.) *Postabortion care service delivery matrix* (draft). Washington, D.C.: USAID.
- USAID (2005b). *What works: A policy and program guide to the evidence on family planning, safe motherhood, and STI/HIV/AIDS interventions – Module 2 Postabortion care* (draft). Washington, D.C.: The POLICY Project.
- USAID/CATALYST. (2006). PAC compilation document. Washington, D.C.: USAID.
- Vaughan, P. & Morrow, R. H. (Eds.). (1989). Epidemiological surveys. *Manual of epidemiology for district health management*, pp. 71-88. Geneva: World Health Organization (WHO).
- Verkuyl, D. A. & Crowther, C. A. (1993), Suction vs. conventional curettage in incomplete abortion: A randomised controlled trial. *S.Afr.Med.J.*, 83 (1), 13-15.
- Weeks, A., Alia, G., Blum, J., Winikoff, B., Ekwaru, P., Durocher, J., & Mirembe, F. (2005). A randomized trial of misoprostol compared with manual vacuum aspiration for incomplete abortion. *Obstet.Gynecol.*, 106 (3), 540-547.
- WHO (1995). *Complications of abortion: Technical and managerial guidelines for prevention and treatment*. Geneva: WHO.
- WHO (2003). *Integrated management of pregnancy and childbirth: Managing complications in pregnancy and childbirth: A guide for midwives and doctors*. Geneva: WHO.
- WHO (2004.) *Unsafe abortion: Global and regional estimates of the incidence of unsafe abortion and associated mortality*. Geneva: WHO.





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