




MVA

Manual Vacuum Aspiration:
Expanding women's access
to safe abortion services



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Ipas works globally to improve women's lives through a focus on reproductive health. We train and equip health care providers to ensure that abortion services are safe and accessible to the full extent of the local laws. For more information on Ipas products, programs and publications:

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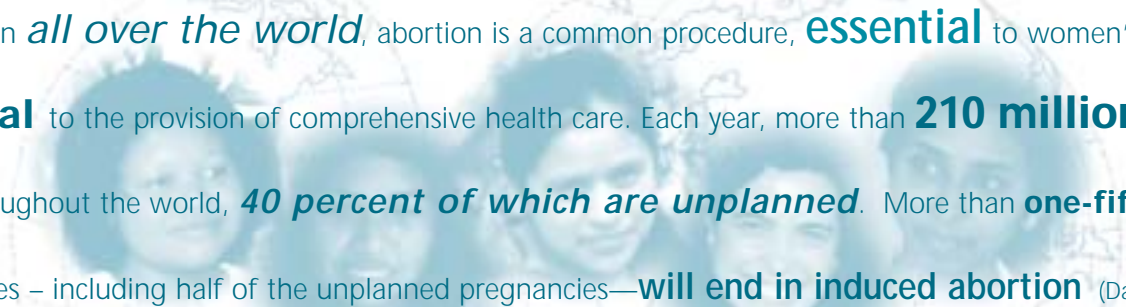


Introduction and Overview

While abortion is legally permitted in many countries, women continue to face profound barriers that restrict their access to safe abortion services and endanger their health. A lack of trained abortion providers, restrictions in service availability and high costs may all present obstacles too great for women to overcome in a timely manner. When women must travel long distances, wait weeks for abortion services or allocate scarce funds for the procedure, abortion may remain unattainable.

Manual vacuum aspiration (MVA) can offer health care systems a safe, accessible and affordable way to provide abortion and overcome barriers that inhibit women's ability to access services. Similar to electric vacuum aspiration (EVA), MVA has several benefits that make it a worthwhile component of abortion services. Compared to dilation and curettage (D&C), MVA offers a safer, more readily accessible and potentially less expensive way to offer high-quality services to women throughout the world.

This monograph outlines both clinical and practical reasons supporting the use of MVA for induced abortion. Data on the safety, effectiveness and acceptability of MVA are presented, as well as considerations for providers interested in delivering MVA services. This document is not intended to be a clinical training manual.



For women *all over the world*, abortion is a common procedure, **essential** to women's health and **integral** to the provision of comprehensive health care. Each year, more than **210 million** pregnancies occur throughout the world, **40 percent of which are unplanned**. More than **one-fifth** of these pregnancies – including half of the unplanned pregnancies—**will end in induced abortion** (Dailard, 1999).

Abortion: Too Often Inaccessible

For women all over the world, abortion is a common procedure, essential to women's health and integral to the provision of comprehensive health care. Each year, more than 210 million pregnancies occur throughout the world, 40 percent of which are unplanned. More than one-fifth of these pregnancies – including half of the unplanned pregnancies—will end in induced abortion (Dailard, 1999).

When trained providers perform abortions using medically accepted methods in hygienic settings, mortality and morbidity rates are extremely low. Under these conditions, the mortality rate is 0.2-1.2 deaths per 100,000 abortions; in comparison, the risk of death during childbirth is six to 25 times higher (Alan Guttmacher Institute, 1999). Yet, the World Health Organization (WHO) estimates that nearly half of all abortions are unsafe because they are performed either by untrained individuals or in unsafe environments (WHO, 1994).

More than 60 percent of women live in countries where abortion is permitted on broad grounds—55 percent of women in the developing world and 86 percent of women in the developed world (Dailard, 1999).¹ Nevertheless, women's access to abortion services is often hampered by other factors, even when it is legally permitted. These factors include the procedure's cost, lack of trained abortion providers, lack of supplies and equipment, long distances to service-delivery sites, delays in operating room availability, lack of social acceptance of abortion and failures in infrastructure. These barriers prevent women from obtaining safe and legally permitted services early in pregnancy. By incorporating MVA into service delivery, health systems can meet their obligation to help women access all permissible services and safeguard women's health and future at the same time.

MVA: A Way to Expand Access

MVA offers a safe, effective, accessible and low-cost way to overcome barriers that hamper women's access to abortion services. MVA can be performed in typical clinical settings and as an outpatient procedure without the need for operating room facilities. MVA does not require electricity, and may be performed by midlevel providers, such as midwives, nurse practitioners and physician assistants. Though D&C was once the standard of care and is still used in many settings, MVA is a highly effective and safer method of uterine evacuation. These qualities can help shift abortion services to community based health care settings, which not only decreases costs but also expands access to services. A World Health Organization Technical Working Group has listed vacuum aspiration as an essential element of care at the first-referral level (WHO, 1991).

Trained health care personnel around the world have used MVA technology to improve the quality of abortion care in diverse settings. MVA can also be used to perform menstrual regulation, treat incomplete abortions, perform endometrial biopsies and back-up

Summary of MVA Performance

Mechanism of Action. A cannula is attached to the vacuum aspirator and inserted through the cervix. The contents of the uterus are aspirated using vacuum equivalent to that produced by an electric vacuum aspiration pump.

Indications for Use. MVA is an appropriate technique for induced abortion, spontaneous abortion, menstrual regulation, treatment of incomplete abortion, and endometrial biopsy.

Effectiveness. For uterine evacuation: Studies show that vacuum aspiration (including MVA) typically has more than a 98 percent rate of effectiveness.

Safety. Complication rates for the four major complications most commonly associated with uterine evacuation (excessive blood loss, pelvic infection, cervical injury and uterine perforation) are lower for vacuum aspiration than for D&C.

—Greenslade et al., 1993b



lpas flexible cannulae used with MVA.

failed abortions that were performed by either surgical or medical (pharmacological) methods. The method has the capacity to dramatically expand women's access to abortion services. In remote areas, MVA may be the difference between safe and effective abortion services and no services at all. MVA can be "extremely effective in improving the accessibility of high-quality abortion services at all levels of the health system...MVA can play a very important role in helping providers offer safe, effective abortion care that is acceptable to women and responds to their needs—that is, care that can truly make a difference in improving women's health" (Greenslade et al., 1993a).

Manual Vacuum Aspiration: Clinical Overview

First-trimester surgical abortion is performed using one of two methods: Vacuum aspiration (also known as "suction curettage") or sharp curettage (also known as D&C). Vacuum aspiration uses an electric pump or manual aspirator to create a vacuum, and the uterine contents and lining are removed through a cannula (PATH, 1994). Because vacuum aspiration is the safest method for performing first-trimester abortion, it is the most common method used in industrialized countries. Vacuum aspiration is used for about 97 percent of first-trimester abortions in the United States; Canada, China, New Zealand, Singapore and other countries use vacuum aspiration for almost all first-trimester surgical abortions (Greenslade et al., 1993b).



"Health service managers should make every effort to replace sharp curettage with vacuum aspiration." (IPPF, 2001)

Where vacuum aspiration is unavailable, sharp curettage is used. In this method, the uterine lining is scraped with a metal curette, often while the patient is under general anesthesia or heavy sedation. Medical experts do not recommend using D&C unless vacuum aspiration and medical methods are unavailable, because sharp curettage carries higher risks (IPPF, 2001; WHO, 2000).

MVA for Early Abortion

In countries such as Bangladesh and Vietnam, MVA has been used for several decades to provide early abortion and menstrual regulation before confirmation of pregnancy. Prior to the mid-1990s, however, there were few documented studies on the use of MVA before the seventh week of pregnancy, due in part to the difficulties in confirming pregnancy at this early stage.

The advent of new, highly sensitive pregnancy-detection techniques has encouraged many providers to adopt MVA for early abortion. The procedure is being used in countries such as the United Kingdom, the United States and South Africa to offer women the option of having an abortion early in pregnancy.

In the United States, MVA before the seventh week of pregnancy was first described in 1995 by Dr. Jerry Edwards, Medical Director of Planned Parenthood of Houston and Southeast Texas. Dr. Edwards' method combines MVA with sensitive pregnancy tests, transvaginal ultrasound and on-site tissue inspection to provide abortion as soon as the pregnancy is confirmed. Edwards' research indicates that MVA for early abortion is 99.2 percent effective.

—Benson et al., 2001; Edwards and Creinin, 1997; Fuller, 2001



MVA uses a handheld vacuum source with a plastic cannula to perform uterine evacuation. A vacuum equivalent to that produced by the electric pump used in electric vacuum aspiration (EVA) is transferred into the uterine cavity. MVA is as safe and effective as EVA, and has been used for decades (Greenslade et al., 1993b).

MVA is Very Effective for Abortion

Research over the past 30 years has studied vacuum aspiration in more than 400,000 cases, in more than two-dozen countries and over 50 studies. The findings are clear—vacuum aspiration is safe and effective for first-trimester abortion.² The body of literature reveals that vacuum aspiration's effectiveness ranges from 87 to 100 percent. In most of these studies the method's effectiveness rates exceeded 98 percent. (Greenslade et al., 1993b; Hemlin and Möller, 2001; Freedman et al., 1986; Westfall et al., 1998; Creinin, 2000; Edwards and Creinin, 1997).

More studies have examined the effectiveness of electric vacuum aspiration than manual aspiration. Because the mechanisms of action and level of vacuum for the two methods are the same (Balogh, 1983; Freedman et al., 1986; Roy, 1974), however, effectiveness data for EVA is applicable to MVA. In several studies where both MVA and EVA were used, the two methods had equivalent rates of effectiveness (Hemlin and Möller, 2001; Balogh, 1983; Freedman et al., 1986).

Twelve research reports over 25 years have specifically examined the effectiveness of MVA for induced abortion, gathering data on almost 20,000 women. In these studies, MVA's effectiveness ranged from 95 to 100 percent. In the largest study, Laufe analyzed complication rates associated with 12,888 MVA procedures in 21 countries. The procedure's effectiveness was greater than 98 percent (Laufe, 1977). (See Table 1 for research reports examining MVA's effectiveness.)

TABLE 1: Effectiveness Data For Manual Vacuum Aspiration (MVA)

Author, Date, Country	Approximate Weeks LMP	Induced Abortion (N = MVA procedures)	Effectiveness
Hemlin & Möller 2001; Sweden	< 8	N = 91	> 97 %
Creinin 2000; USA	< 7	N = 25	96 %
Edwards & Creinin 1997; USA	< 6	N = 2,399	> 99 %
Westfall et al. 1998; USA	< 12	N = 1,677	> 99 %
Freedman et al. 1986; USA	< 12	N = 924	> 98 %
Balogh, 1983; 3 countries	< 16	N = 508	> 99 %
Ojo & Ladipo 1981; Nigeria	< 6	N = 262	> 95 %
Bhatia et al. 1980; Bangladesh	< 9	N = 212	> 99 %
Ladipo et al. 1978; Nigeria	< 6	N = 507	> 96 %
Laufe 1977; 21 countries	< 6	N = 12,888	> 98 %
Filshie & Sanders 1977; UK	5-12	N = 251	> 99 %
Roy 1974; India	< 12	N = 160	> 98 %

CASE STUDY: Transition from Sharp Curettage to MVA in Vietnam

Abortion is legally permitted and widely available in Vietnam. MVA is typically used for abortions up to six weeks LMP and sharp curettage is used for later procedures. In 1995, the Reproductive Health Program began training doctors and midwives in selected provinces on the use of MVA through 12 weeks LMP. A study of 210 MVA procedures confirmed the method's safety; neither procedural complications nor delayed complications were identified during a five-week follow-up period.

In focus groups with Vietnamese physicians, providers noted that MVA is easier to perform than D&C, can be conducted on the local level, and is less costly than other methods of abortion. One physician summed up the benefits of MVA this way: "First, it is small and light and less costly than a curette set. Second, it is simpler and more economical in terms of electricity for sterilizing the valve. Third, professionally, it is better than curettage in that the procedure requires less time and causes less pain to clients; some clients do not even need painkillers. In addition, it can be used everywhere, not only in places with electricity. We don't even need electric light."

MVA is being used to bring services directly to women. Because MVA instruments are portable, Vietnamese health providers take the instruments into the villages and provide services on a very local level so that women do not have to travel for abortions.

The providers also stressed that women appreciate the MVA method, particularly because it is less painful than D&C. As one physician noted, "The time needed for the procedure and stay in hospital has been dramatically shortened. Now, clients need only 30 minutes to rest. In the past, when dilatation and curettage was applied, clients had to rest in hospital until late afternoon. Sometimes, they were shocked into a daze by the procedure." Alleviating patients' pain and anxiety also helps make the procedure easier and more comfortable for the providers.

An assessment by the World Health Organization, the Vietnamese Ministry of Health, the Vietnamese National Committee for Population and Family Planning, and other agencies also recommended that vacuum aspiration replace sharp curettage as the preferred technique for first-trimester abortion.

—Nguyen and Pham, 1998



Ipas's MVA instruments have been shown to be particularly effective in providing first-trimester abortions. A study compared the Ipas double-valve aspirator with other vacuum sources used at centers in Bangladesh, Southeast Asia and Yugoslavia. The Ipas aspirator proved as safe and effective as the other methods (Balogh, 1983).

Where medical abortion is available, it is appropriate to offer women a choice between MVA and medical abortion. MVA is also very effective in serving as back-up when medical abortion fails. Between two and 10 percent of medical abortion patients require a surgical procedure either because of patient request or incomplete abortion (MacIsaac and Darney, 2000). In most instances, MVA offers a simple and inexpensive way to provide back-up on an outpatient basis and in the same clinical setting as the medical abortion. Medical abortion providers who are able to perform back-up surgical abortion services can offer patients another choice among first-trimester procedures. Studies in countries as diverse as India, the United States, Vietnam and the United Kingdom have all shown that vacuum aspiration is extremely effective in providing first-trimester induced abortion. Further, effectiveness rates remain high, regardless of the country's medical system or level of development.

In most studies *examining* the **MVA procedure** for induced abortion, MVA's *effectiveness* was **greater than 98 percent**.

(Laufe, 1977)

Vacuum Aspiration is Very Safe for Induced Abortion

Vacuum aspiration is one of the safest surgical procedures available, and the safest way to perform first-trimester abortion. Vacuum aspiration can be used for almost all patients. Providers should always follow any prescribed precautions for medications and procedures. The conditions requiring precautions for MVA procedures are similar to those of other surgical first-trimester abortions and potential complications are the same.³

About 98 percent of vacuum aspiration procedures occur without complications (Cates and Grimes, 1981; Lafe, 1977; Freedman et al., 1986).⁴ Vacuum aspiration results in significantly fewer complications than D&C, including incidences of excessive blood loss, pelvic infection, cervical injury and uterine perforation (Cates and Grimes, 1981; Lafe, 1977; Freedman et al., 1986).

A major study of 50,000 vacuum aspirations performed in the U.S. found that “incidence of excessive blood loss was 50 [percent] lower with vacuum aspiration than with sharp curettage (0.5 compared to 1.0 complications per 100 procedures)” (Tietze and Lewit, 1972). WHO now recommends MVA as the preferred method of uterine evacuation, suggesting that sharp curettage be used only if MVA is not available (WHO, 2000). (See Table 2 for data on the safety of MVA compared with sharp curettage.)

Studies on the safety of vacuum aspirations have found extremely low complication rates. For example, safety data from 170,000 first-trimester EVA procedures performed at three U.S. outpatient clinics over a 16-year period found a rate of nine complications per 1,000 procedures, with only 0.7 complications per 1,000 procedures requiring hospitalization and no deaths (Hakim-Elahi et al, 1990). Similarly, a report on 12,888 MVA procedures occurring in 21 countries found an immediate complication rate of 0.8 per 100 procedures, and no deaths (Lafe, 1977).

TABLE 2: Safety Data for Vacuum Aspiration (VA) and Sharp Curettage (SC) for Induced Abortion

Author; Date Country (N=VA/SC)	Abortion Indication	Approximate Weeks LMP	Number Complications per 100 Procedures							
			Excess Blood Loss		Pelvic Infection		Cervical Injury		Uterine Perforation	
			VA	SC	VA	SC	VA	SC	VA	SC
Hart & Macharper 1986; Australia	Induced (17,247/807)	≥12	0.3	0.5	0.2	0.7	NA	NA	NA	NA
Leat et al. 1976; Singapore	Induced (210/210)	6-12	1.0	0.5	1.9	2.4	NA	NA	0.0	0.0
Roy 1974; India	Induced (320/450)	12	0.0	0.7	NA	NA	0.0	0.9	0.0	3.3
Edelman et al. 1974; 9 countries	Induced (2,498/1,814)	7-19	2.5	1.7	2.5	1.5	1.1	1.1	0.1	0.2
Andolesk;1974	Induced	≥7	3.9	6.0	0.6	1.2	0.7	0.7	0.0	0.1
Tietze & Lewit 1972; USA	Induced (52,962/3,311)	≥16	0.8	1.5	1.0	1.4	0.9	0.8	0.3	0.9
Vladov 1967; Bulgaria	Induced	5-9	4.0	2.5	1.3	2.5	NA	NA	NA	NA

Specific data on the safety of MVA find few complications associated with the method. In general, MVA demonstrates the same level of safety as EVA, and greater safety than sharp curettage (Lafe, 1977; Freedman et al., 1986). (See Table 3.) A recent Vietnamese study examined 210 first-trimester MVA abortions and included extensive follow up. Patients completed a daily symptom diary for seven days after the MVA, and were inter-

viewed by a health care provider weekly for five weeks. No serious complications such as infection or heavy bleeding occurred among the study group (Do et al., 1998).

TABLE 3: Safety of Manual Vacuum Aspiration (per 100 procedures)

Major Complications	Freedman et al., 1986 (n=924)	Laufe, 1977 (n+12,888)
Excess Bleeding	1.1	.4
Pelvic Infection	0.9	.01
Cervical Injury	0.0	.05
Uterine Perforation	0.2	.03

MVA remains a safe procedure when practiced in the primary care setting. One doctor in independent family practice examined the complication rates of 1,677 MVA abortions performed in this setting. MVA was 99.5 percent effective, with a minor complication rate of 1.25 per 100 procedures; minor complications included infection (12 cases), retained products of conception (8 cases) and other complications not requiring hospitalization (1 case). These minor complications were easily treated, and there were no major complications or deaths among the procedures reviewed. The authors con-



CASE STUDY: MVA Brings Safe Services to Kosovar Refugees

The United Nations High Commissioner for Refugees (UNHCR) has noted that refugee women suffer enormous amounts of physical and emotional stress, are frequently the victims of rape and sexual violence, and often lack access to contraception and abortion. This was certainly the case for women fleeing the NATO-led bombing of Serbia in 1999. Hundreds of thousands fled Kosovo for the refugee camps of Albania. Many of the refugee women were in desperate need of comprehensive reproductive health care, and many were pregnant as a result of rape.

In 1999, the Albanian Family Planning Association asked Ipas and the Planned Parenthood Federation of America to train 12 obstetricians and gynecologists in providing high-quality abortion care. The doctors all worked at the Obstetric and Gynaecological Hospital, located in the city of Vlora, which had just opened a new family planning clinic to provide medical care for Kosovar refugees and Albanian women. The training addressed early abortion using MVA, including management of complications, infection prevention protocols, proper instrument processing and disinfection, and patient education and support. The obstetrician/gynecologists at the hospital remain enthusiastic about the MVA equipment, now the preferred method for providing first-trimester abortion.

Introduction of MVA has dramatically improved the quality of abortion services in the Women's Center. Previously, the hospital performed D&C under either general anesthesia or, in some instances, without anesthesia at all. For women undergoing D&C without pain control, the experience was extremely painful and traumatic. Now that the shift has been made to MVA, the hospital uses local anesthesia, which is very effective in reducing the patient's pain.

Providers note that they used to fear uterine perforations and other complications when performing D&Cs. Since switching to MVA, doctors are more confident that few complications will result; thus, they are more comfortable performing the procedure. Anecdotally, physicians report that the number of postabortion complications has decreased since introduction of MVA. MVA is also noted for being cost-effective; because the instruments do not require an autoclave for disinfection, the cleaning process saves money and energy for the hospital. The MVA instruments are described as "very easy to use, practical, and effective." Although the refugees have returned to Kosovo, Albanian women still benefit from MVA.

—Falk, 2001; Entela Shehu, personal communication

The Provider Perspective

"MVA for early abortion has allowed me to improve my patients' satisfaction with their procedure. To a woman, they all think the "noiseless" abortion is much better than the electrical one. What many women remember the most from previous abortions is the "awful" noise of the machine. With MVA they very frequently want to know when I'm going to do their abortion when I've already finished!"

—Suzanne T. Poppema, MD,
International Medical Consulting,
Edmonds WA

clude that MVA may be safely and effectively provided in the primary office setting (Westfall et al., 1998).

Patients are Highly Satisfied with MVA

The majority of women who have had an MVA procedure are very satisfied with the experience. Patient acceptability is a very important consideration when making decisions about what kind of abortion services to offer. Ensuring that patients have a positive experience is an integral part of offering high-quality services.

Between 88 and 95 percent of women say they would recommend MVA to a friend.⁵ One study examining satisfaction of patients who were randomly assigned to have either EVA or MVA found that the majority of both groups were very satisfied with their procedure. No major differences in acceptability were found between the two groups (Thornburn Bird et al., 2001).

In another study where women opted for a first-trimester procedure using either medical abortion or vacuum aspiration, 82 percent of those who chose vacuum aspiration reported that they were "very" or "somewhat" satisfied.⁶ Seventy-eight percent said they would recommend vacuum aspiration to a friend, and 93 percent said they would choose vacuum aspiration if they needed another abortion (Harvey et al., 2001).

A U.S. study randomly assigned women with no treatment preference to receive either MVA or medical abortion, and then examined the patients' satisfaction. Ninety-two percent of women who received MVA said they would choose the same method again, compared to 63 percent of medical abortion patients. Such response indicates high patient satisfaction with the MVA method (Creinin, 2000).

Where MVA is provided in an office setting or lower-level health facility, women may also appreciate the greater personal attention and less institutional environment (Westfall et al., 1998). Because MVA uses a handheld, non-electric aspirator, the procedure does not generate any noise. This leads to a gentle and silent procedure, and one which is often more comfortable for the woman. Doctors in Vietnam have noted that MVA's lack of noise helps reduce patient's anxiety during the abortion procedure (unpublished focus group discussions, 1998). Some MVA providers have commented that patients ask for the "quiet abortion," indicating the patient's preference for this aspect of the MVA procedure. One study of 108 women found that EVA patients felt

CASE STUDY: British Women Favor Shift to Local Anesthesia

Most British abortion providers use vacuum aspiration performed under general anesthesia. In 2000, the British Pregnancy Advisory Services (BPAS), Britain's largest provider of specialist abortion services, tried something new. BPAS began offering MVA abortion with local anesthesia as an outpatient procedure at one of their central London outpatient clinics. The new BPAS regimen includes MVA with local anesthesia consisting of a para-cervical block. Entonox was also offered. Women were offered a choice between MVA under local anesthetic, vacuum aspiration under general anesthetic or medical abortion.

Over 200 clients who opted for MVA completed a questionnaire during recovery. Over 80 percent would recommend MVA with local anesthesia to a friend. Almost two-thirds reported the procedure was "moderately" or "mildly" painful. Only 38 percent found the procedure "very" painful. Women's reasons for choosing MVA with local anesthetic were related to the method's convenience, and included the shorter clinic time and the ability to drive home.

—Furedi, 2000



By allowing **pain** to be *effectively managed* with local anesthetic, analgesics and verbal support, **MVA** lowers costs, improves *safety*, enhances patient **satisfaction** and expands *service availability*.

the noise associated with the procedure increased their pain although, in general, the patients' pain perception was not significantly different between the two techniques (Edelman et al., 2001).

Abortion is a highly personal experience, and what is best for one woman may not be for another. Women place high value on being able to choose between abortion methods. Moreover, the ability to choose yields high satisfaction regardless of which procedure women select. The option to choose between abortion methods helps to increase patient satisfaction and has emotional benefits for the woman, regardless of the method selected (Jensen et al., 2000; Creinin, 2000).

Pain Management with MVA is Simple and Affordable

MVA allows a lower level of pain control medication than sharp curettage. Local anesthesia—which has been proven to be very safe for use in abortion procedures—can be effectively used in conjunction with analgesics for pain control during MVA. Local anesthesia reduces recovery time and requires fewer expenses for personnel, infrastructure and equipment.

In contrast, the D&C procedure is typically performed with general anesthetic or heavy sedation. This level of pain management is expensive, and general anesthesia is associated with an increased risk of complications from blood loss, cervical injury, uterine perforation and subsequent abdominal hemorrhage (Grimes et al., 1979; Greenslade et al, 1993b). Heavy anesthesia also places a strain on the health care system, as it requires more complicated facilities and equipment. In many countries, reliance upon general anesthesia limits the settings in which surgical abortions can be performed.

The patient's reduced perception of pain with MVA is particularly notable in comparison with the D&C procedure. In focus groups with Vietnamese physicians, participants consistently described a reduction of patients' pain as a major benefit of MVA. Reducing pain also lessens the patient's anxiety and fear, thereby improving her overall satisfaction with the procedure. As an added benefit, enhancing the woman's experience and lowering her pain makes the procedure more comfortable for providers as well (Focus Group, 1998). By allowing pain to be effectively managed with local anesthetic, analgesics and verbal support, MVA lowers costs, improves safety, enhances patient satisfaction and expands service availability.

Manual Vacuum Aspiration: Service Delivery

Providers appreciate the simplicity, portability and cost-effectiveness of MVA. Any provider who engages in gynecological services is probably well equipped to provide MVA. The method can be offered with little in the way of specialized instruments and

The Provider Perspective

"This is the one of the greatest inventions ever in relation to reproductive health care. If you are not using the Ipas MVA, then you are not providing the level of care that your patients deserve. I use this in my office up to 12 weeks gestation for all of my patients. It's quiet, it's gentle, it's easy and it works . . . We should not provide abortion care today, including the treatment of abnormal early pregnancy, without using this instrument."

—Mitchell Creinin, MD, Associate Professor and Director of Family Planning and Family Planning Research, University of Pittsburgh School of Medicine, Pittsburgh, PA

supplies and with modest adaptations to existing facilities. The instruments do not require electricity, and providers at various levels of the health care system can safely perform MVA. Further, there are few additional expenses once the MVA instruments are purchased, the staff trained and the facility arranged.

MVA is easy to use in a variety of settings, including first-referral level sites, primary care facilities, medical offices and clinics. Its simplicity helps move abortion services out of hospital and operating room settings where D&C is typically performed (Magotti et al., 1995). (See Table 4.)

MVA also allows providers to offer women safe and effective abortions in a private office or when the operating theater is booked, reducing delays and decreasing the number of staff required for the procedure.

The burden on health care systems is reduced when a provider is able to perform an abortion at the time the woman presents at the facility, rather than waiting for physicians and operating rooms to become available. According to a 1997 study by de Pinho and McIntyre, cost is also reduced; in South Africa, first-trimester procedures performed in health centers' cost 26 percent less than those performed in community-based clinics and 133 percent less than hospital-based abortions (as cited in Althaus, 2000). A shift to performing MVA outside the hospital and/or operating room setting helps conserve resources that can then be directed to family planning and other essential health care services for women and their families. (See "Cost: Equipment and Personnel" below.)

TABLE 4: Typical Characteristics of Practice by Method		
Characteristic	Manual Vacuum Aspiration	Sharp Curettage
Location	Exam room, emergency room, ob/gyn operating room	General operating room or ob/gyn operating room
Pain Control	Mild sedation, analgesia and/or local anesthesia may be used for pain control	Usually performed with heavy sedation or general anesthesia
Level of Provider	Gynecologist, general physician, trained paramedical personnel (e.g. midwives or physician assistants)	Gynecologist, general physician
Clinic or Hospital Stay	Outpatient procedure: Several hours	Depending on setting and anesthesia use, may be one or more days

—Johnson, et al., 1992

Other locales face more challenging difficulties in providing medical care, such as a lack of trained health care professionals or inadequate equipment. MVA makes safe abortions possible in low-resource or remote areas, particularly where other methods are not feasible. MVA presents a means of offering surgical services by trained midlevel providers, which is especially important in regions with low doctor-patient ratios or few available physicians. When health professionals must travel to rural areas to offer health care, MVA offers a convenient, portable and cost-efficient way to ensure that abortion services reach remote areas of the country. MVA allows safe abortion without electricity and provides an excellent back-up method for EVA where electricity is unreliable.



Equipment and Facility Requirements

Adopting MVA services requires few, if any, changes to either facilities or infrastructure. Because of its simplicity, MVA can be offered in lower-level health facilities and as an outpatient procedure. It is suitable for integration into hospital ob/gyn wards, private practices, community clinics, emergency rooms and other settings.

Optimally, providers will have a private space for counseling and discussing the procedure with the patient, as well as a comfortable and appropriate place for the patient to recover after the procedure. If private space is not available, providers should find a way to counsel women that respects privacy and confidentiality.

The abortion itself can be performed in a small examination or procedure room, which should be well-lit, well-ventilated and large enough to accommodate a gynecological examination table.

The instruments necessary for MVA are significantly less expensive than those required for EVA. Supplies needed for sterilizing or high-level disinfecting instruments and for examining the products of conception are generally simple. (See "Equipment and Personnel Cost" below.)

MVA Providers

Midlevel providers can safely perform MVA at the primary health level without an increase in complication rates. In Bangladesh, female paramedics (called Family Welfare Visitors) use MVA instruments to perform menstrual regulation under medical supervision. The complication rates for abortions conducted by paramedics appear to be lower than those reported in studies in which physicians performed the abortion (Greenslade et al., 1993b; Freedman et al., 1986; Cates and Grimes, 1981). To assess non-physicians' ability to provide safe abortion, a U.S. study examined rates of complications for vacuum aspiration abortions provided by physicians versus physician assistants.⁸ Over a two-year period, data were collected on 2,458 first-trimester abortions. There were no significant differences in complication rates between physicians and physician assistants for overall, immediate or delayed complications (Freedman et al., 1998). (See Table 5.) In Vietnam, where only physicians offer D&C services, using MVA for first-trimester abortion has expanded the range of providers. Midwives and other medical staff are now trained to perform MVA, making services more widely available—and lessening the burden on physicians and hospitals (Focus Group, 1998). Where abortion facilities are scarce, the widespread adoption of MVA and training of providers can help provide quality services on the local level (Greenslade et al., 1993b).

The Provider Perspective

"Many women prefer this quiet procedure performed in the primary care setting to the sometimes less personal care received in large abortion clinics, which typically use electric power suction. MVA is well-tolerated, safe and effective, and easily integrated into a busy primary care office without expensive capital investment of ultrasound or power suction equipment."

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CASE STUDY: Nurse Midwives Provide MVA in South Africa

In 1997, South Africa implemented the *Choice on Termination of Pregnancy (CTOP) Act*, becoming the first Sub-Saharan country to legalize first-trimester abortion upon request. Previously, abortion was highly restricted, and illegal abortion was many women's only option for ending unwanted pregnancy.

Before legalization, women seeking treatment for incomplete abortion made up almost 50 percent of public hospitals' ob/gyn caseload. One study indicated that, in 1993, 45,000 South African women were admitted to public hospitals with either spontaneous abortions or complications from induced abortions. One-third of these women presented with medical complications suggesting unsafe abortion; more than 400 died each year. Incomplete abortion was traditionally treated by D&C, under general anesthesia in the operating room.

Upon implementing the new law, the South African government committed to providing abortion free of charge, to all South Africans who needed it. Legalization did not solve access problems in the country's nine provinces, however. A major barrier was a lack of trained providers. Because abortion had previously been highly restricted, there were very few health professionals outside hospitals who knew how to perform the procedure.

Compounding the problem was the fact that many South Africans live far from hospitals and are most likely to receive care from comprehensive health centers and clinics. The government determined that abortion services should, therefore, be provided through these facilities. Particularly in rural areas, health facilities often lack electricity, equipment and other resources. Providing electric vacuum aspiration under these conditions would be unfeasible.

To overcome these barriers, both registered midwives and medical practitioners can now perform first-trimester abortion. Nurse midwives already provide reproductive health care in clinics and health centers, and midlevel providers have been shown to be competent at performing the relatively simple MVA technique.

In 1998, the National Directorate for Maternal, Child and Women's Health initiated the *National Abortion Care Programme* to train providers in safe, effective and accessible abortion services. The training included provision of abortion and contraceptive services, management of incomplete abortion and treatment of complications from unsafe abortion. Subsequent evaluation has indicated that almost 90 percent of the midwives use MVA to perform abortion and that the quality of their clinical techniques is acceptable in at least 75 percent of observed procedures.

While more training and access is needed in South Africa, women's health is improving. The number of second-trimester abortions has decreased from one in three pregnancy terminations performed at a public health facility in 1997, to one in four in the first six months of 1999. A study at a Pretoria hospital indicated that the rate of complications from incomplete abortions declined from 51 percent in 1996, to 29 percent in 1997. And, in 1997, less than 10 women died from septic abortions, compared to the hundreds who had died before the CTOP Act.

(Althaus, 2000; Dickson-Tetteh and Billings, forthcoming.)

**TABLE 5: Complication Rates by Provider
per 1,000 procedures (n=2458)***

	Physician	Physician Assistant
Immediate Complications	7.7	4.7
Delayed Complications	23.8	22.6
Overall Complications	30.8	27.4

**Freedman et al, 1986*

Equipment and Personnel Costs

MVA is a relatively inexpensive service to provide, and is much less expensive than EVA in terms of initial costs. Reusing the MVA aspirator after disinfection or sterilization helps reduce costs. In some settings outside the U.S., the cannulae are also sterilized or high-level disinfected. Even when limited to single-use, MVA instruments are considered inexpensive in many facilities; costs of replacing instruments are offset by the higher costs associated with staff time, sterilization and disinfection. Additional savings are realized when abortion services are moved out of the operating theater or emergency room, reducing expenditures for anesthesia, hospital infrastructure, sterile supplies and patient recovery care.

MVA For Treatment of Incomplete Abortion

MVA is an extremely safe and effective way to treat incomplete abortions. It can be used to treat women whose incomplete abortion results from a failed abortion (medical or surgical), an unsafely induced abortion, or a spontaneous abortion. WHO recommends MVA over D&C for treating incomplete abortion. MVA's most compelling potential is in addressing the tragic effects of unsafe abortion, a leading cause of maternal death. The problem of unsafe abortion is most critical in the developing world where broad access to comprehensive, high-quality health care is most limited. Many women turn to unsafe abortions, and then require emergency care for the life-threatening complications that often result when untrained individuals perform abortions in unsafe environments. In these settings, MVA can help expand access to life-saving health services, lower costs for overburdened health systems and reduce maternal mortality.

The global Safe Motherhood Initiative has noted that MVA helps enhance the safety and quality of treatment for incomplete abortion, and can help reduce maternal death. Studies evaluating more than 5,000 procedures for incomplete abortions using MVA have found its effectiveness to typically exceed 98 percent. Further, MVA helps reduce the costs associated with incomplete abortion, primarily by decreasing the woman's hospital stay – in some cases by as much as 70 percent. One analyst noted that the use of (MVA) rather than D&C can result in savings for both health service providers and patients.

—Baird et al., 1995; FCI, 1990;
Jowett, 2000; WHO, 2000

A study in Sweden estimated that performing MVA in the clinic (rather than providing EVA in an operating room) would result in cost savings of 24 percent from the operating theater and surveillance time alone. The authors estimate that, if one-tenth of Sweden's abortions were conducted with MVA, the national savings would be about U.S. \$1,140,000 annually (Hemlin and Möller, 2001).

Shifting to MVA reduces medical expenses related to the treatment of complications such as uterine perforation, excess blood loss, pelvic infection and cervical injury. The Joint Program for the Study of Abortion (JPSA) review of 250,000 cases indicates that the complication rate for MVA is approximately half of that for D&C. A 50 percent decrease in complications will create a corresponding reduction in the expenses of treating complications (Grimes et al., 1977).

Using midlevel providers rather than physicians to perform abortion services also lowers staffing costs. Staffing costs will vary depending on the type of facility where abortion is being performed, and the level of providers staffing that facility.

Costs in staff time are also associated with follow-up visits. Because of MVA's effectiveness, many providers do not require a follow-up visit and many women, particularly those in rural areas, do not find it feasible to return for a second visit. Some clinics, however, require or encourage patients to return for a follow-up exam to confirm that there are no complications and that the procedure was successful.

Training Needs: Medical Procedures

The services currently provided at a given facility will determine staff needs for training and oversight for introducing MVA. For those already performing EVA, the addition of MVA requires only minimal additional training in the differences between the two methods of suction. D&C providers, on the other hand, need training not only in the MVA procedure but also in performing abortions for patients under local rather than general anesthesia and/or heavy sedation. For providers who do not currently offer abortion services, but who are interested in expanding the services they offer, training and staffing needs may be more substantial. Staffing requirements vary depending on the location of services and the way that health care is managed in that environment.

The range of the medical and logistical duties includes answering patients' questions about abortion; greeting and providing intake services; helping with financial screening and aid; conducting physical examinations; performing MVA; assisting with follow-up appointments and questions; and handling complications. Abortion complications are

The Provider Perspective

"Fewer complications are caused by MVA in comparison with other methods. Clients are happier with MVA, which rarely causes uterine perforation. Thus, it can be used more widely at the grassroots level. Counseling is also easily accepted by people, especially among religious followers, because aspiration does not cause as much fear as abortion by D&C. Additionally, MVA requires much less time. So, more time can be devoted to counseling about aspiration, contraception methods, and prevention of infections after aspiration."

—Ta Kim Dan, MD. Department of Ob/Gyn, Can Tho Hospital, Can Tho, Vietnam.

For many women, effective **counseling is key** to the patient's *successful abortion experience*, and **integral** not only to providing **information and support**, but also to helping the patient make her decision. One U.S. study found that the **greatest factor** influencing the woman's satisfaction with her abortion care was the *information and counseling* she received (NAF, 2001).

extremely rare; nevertheless, all providers must be able to handle these situations if they arise. Staff will also need to be trained in CPR and in managing other emergencies as well as emergency transport.

Training Needs: Options & Contraceptive Counseling

Ideally, providers who are offering abortion services (including MVA) incorporate counseling so that the woman is fully informed of her choices and the course of treatment. For many women, effective counseling is key to the patient's successful abortion experience, and integral not only to providing information and support, but also to helping the patient make her decision. One U.S. study found that the greatest factor influencing the woman's satisfaction with her abortion care was the information and counseling she received (NAF, 2001).

A woman experiencing an unintended pregnancy and seeking an abortion is likely to be under a certain amount of psychological, physical or logistical stress and coping with multiple issues (Mogul Garrity and Castle, 1996). Service providers should aid and support each woman in making the best decision for her unique situation. Staff must be able to respond with information and assistance in a caring and patient-centered manner to make the experience as positive as possible for the woman. Providing counseling and information to women seeking an abortion is a special and important skill that requires training for new abortion providers and staff.

Contraceptive counseling is another essential component of patient-centered abortion care. A woman seeking an abortion does so because she does not want to be pregnant at that time; she may want to avoid childbearing for the immediate future, if not longer. Pregnancy can occur almost immediately after abortion. The abortion procedure therefore offers a convenient opportunity for women to receive contraceptive information and services. The brief recovery period after MVA is an opportune time to discuss contraception with patients. In Turkey, the Ministry of Health has concentrated on linking menstrual regulation and contraceptive counseling and services with great success; the prevalence of effective contraceptive method use immediately following menstrual regulation is between 86 and 92 percent (Greenslade et al., 1993b).

Contraceptive counseling and care can be integrated into abortion services regardless of whether the procedure is performed in a doctor's office, hospital setting, clinic or community health center. What matters most is that the patient leaves with information and methods she can use to prevent further unwanted pregnancies (Leonard and Ladipo, 1994).

Possible Legal Requirements

Providers should investigate regulations, practice guidelines or legal requirements that may apply to the provision of MVA. For example, some communities have specific reg-

Abortion in the Second Trimester

As gestation increases, techniques used for abortion are adapted. Both medical means and surgical techniques, such as dilatation (or dilation) and evacuation (D&E), are used. D&E is a surgical procedure involving dilatation of the cervix, suction applied through 12 or 14 mm cannula and specialized forceps. The typical method used in industrialized countries relies on EVA for aspirating the fluid before using forceps to remove the tissue. For resource-limited settings, the technique has been modified by the substitution of manual vacuum aspiration for EVA with no reported increase in complications.

Research conducted at several hospitals in the U.S. and Vietnam used buccal misoprostol for cervical preparation, suction created with a manual vacuum source applied via a large cannula (14 mm) and instrumentation. This modified procedure has promise for settings where safe and effective abortion services in the second trimester are lacking.

—Baird et al., 2001



(ICPD+5) Programme of Action (paragraph 63 iii)

"... in circumstances where abortion is not against the law, health systems should train and equip health-service providers and should take other measures to ensure that such abortion is safe and accessible. Additional measures should be taken to safeguard women's health."

ulations that apply to the facilities in which abortions occur. There may also be laws that direct the manner in which staff is to be protected from exposure to blood, amniotic fluid and fetal tissue. In some locales, providers are required to send all tissue samples to a laboratory for analysis and incineration. Local governments or regulatory bodies typically determine these requirements, so managers and providers should seek advice about the laws in their specific area. Additional equipment or supplies may be necessary to comply with these regulations.

Some countries and communities have laws that mandate the type of provider who can perform abortions. In some places, the original intent of these laws was to protect women from unsafe procedures performed by untrained individuals. However, such laws may act as a barrier to abortion services. For example, some local laws require midlevel abortion providers to be supervised by a physician; lack of a supervisory physician can result in delay or non-delivery of abortion services.

Conclusion

In countries as diverse as the United States, Vietnam, South Africa, Bangladesh and the United Kingdom, manual vacuum aspiration has helped expand women's access to safe and effective abortions. By bringing abortion into a wider variety of facilities, MVA can help overcome barriers that have traditionally hampered access to services.

The introduction of MVA to health care professionals' range of services helps both providers and patients. MVA is extremely safe, affordable and has very few complications. The simplicity and versatility of the technique along with the low cost of instruments, allow providers to offer MVA in settings where EVA is not available. MVA can help to increase the number of providers and facilities offering safe abortions, provide services in areas with unreliable or nonexistent electrical supply and minimize the need for general anesthesia and operating room settings.

This technology, tested and used for almost 30 years, is an important tool for addressing reproductive health needs into the 21st century. MVA can assist nations in implementing the international agreement made at the five-year review of the International Conference on Population and Development (ICPD+5) to ensure safe and accessible abortion services to the full extent of the law. MVA can expand women's access to safe abortion services, ultimately reducing maternal mortality and morbidity throughout the world.

Notes

¹In these countries, the law allows abortion when it is necessary to protect a woman's life or her physical or mental health, for socio-economic reasons or without regard as to reason, at least during the early months of pregnancy... By contrast, 25 percent of women live in countries, overwhelmingly in the developing world, where abortion is prohibited altogether or allowed only to save a woman's life."

²Studies use varying definitions of "effectiveness." In general, effectiveness may be defined as a complete abortion occurring without the need for any additional uterine evacuation.

³With any uterine aspiration procedure, one or more of the following may occur: vagal reaction, incomplete evacuation, uterine or cervical injury/perforation, pelvic infection, hypotension.

⁴As with efficacy data, the equivalent mechanism of action for EVA and MVA means that safety data on electric vacuum aspiration is applicable to manual vacuum aspiration as well.

⁵It can be difficult to assess women's satisfaction with MVA because some studies that compare patients' views about different methods have used widely varying levels of pain relief with the different service delivery methods. These variations complicate comparisons of the acceptability of specific methods.

⁶Most of the women had electric vacuum aspirations; Ten percent had MVA procedures.

⁷Health centers in South Africa provide primary health care as well as dental care, midwife services and treatment by visiting specialists.

⁸"Physician assistants practice under the supervision of licensed physicians, providing patients with services ranging from primary medicine to very specialized surgical care... Most PAs are graduates of specially designed undergraduate physician assistant programs located at medical schools." (NAF, 1997).

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