

Reducing Resource Use and Improving Quality of Care with MVA

by

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Recent studies in four countries showed that use of manual vacuum aspiration (MVA) can conserve health system resources and improve the quality of abortion care. When combined with improvements in patient management, MVA dramatically reduced the cost of treating women with first-trimester incomplete abortion and the time that these women spent in the hospital. These findings have far-reaching implications, since in some countries 50-60% of obstetrics/gynecology budgets are devoted to treating incomplete abortion.^{1,2,3}

The methods commonly used to treat first-trimester incomplete abortion are sharp curettage, also known as dilation and curettage (D&C),* and vacuum aspiration (VA) performed with either an electric or manual vacuum source. In many countries, vacuum aspiration has essentially replaced sharp curettage. VA has been shown to be effective and safer than sharp curettage.^{4,5,6,7} Where vacuum aspiration technology is not available, sharp curettage is still used.

Studies in Kenya, Mexico, and Ecuador examined the practices of MVA and sharp curettage for treatment of incomplete abortion; a study in the United States contrasted use of MVA and electric vacuum aspiration. In most cases, the studies documented decreases in the average cost of treating a woman for incomplete abortion and in duration of hospital stay following introduction of MVA.

The amount of resources consumed by hospitals for treatment of incomplete abortion is not always apparent to hospital or health system administrators. Medical supply costs are not always readily accessible; the expense of reusable equipment is often overlooked after the initial purchase; the costs of resources needed for an overnight hospital stay are frequently difficult to obtain; and staff salaries may not be considered because they are ongoing expenses not allocated specifically for abortion care. Furthermore, the duration of hospital stay dictated by patient management** protocols may not be fully appreciated. However, calculating average costs of resources, including documenting the time women spend in the hospital, provides a clear idea of institutional cost.

The studies in Kenya, Mexico, Ecuador, and the U.S. demonstrated that the introduction of MVA, when accompanied by changes in patient management, can decrease consumption of resources for abortion care. Lessons learned in these studies can help hospital administrators and health care providers focus on the real costs of abortion care and begin to find ways to use existing resources more effectively.

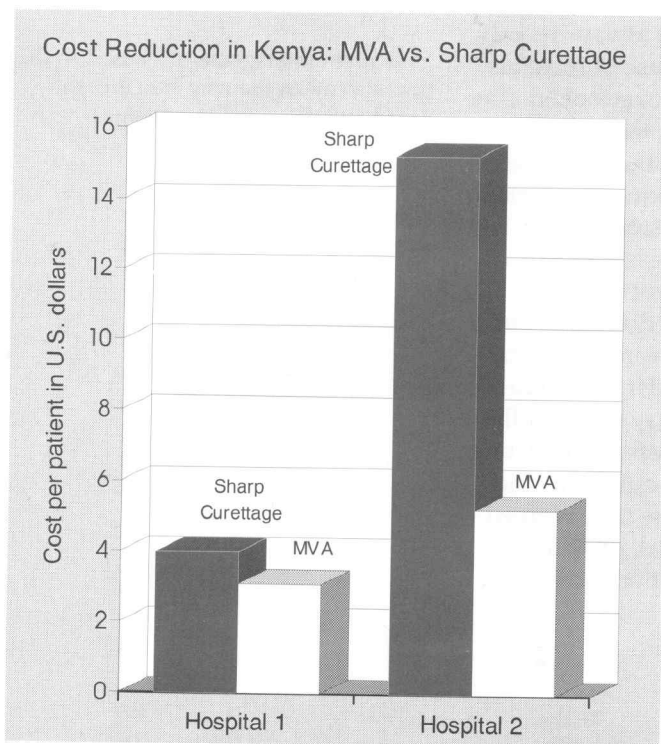
* The term "sharp curettage" is used in this paper to include all uterine evacuation by curette, whether or not cervical dilation is required.

** "Patient management" is used in this paper to mean the way care is organized and provided to patients.

Study Results

Kenya

Two district hospitals in Kenya replaced sharp curettage with MVA for treatment of incomplete abortion. At both, total average cost of abortion care decreased markedly when MVA was introduced. At one hospital, the average cost of treating a patient with sharp curettage was \$15.25;* cost per patient fell to \$5.24 when MVA was used, a striking decrease of 66%. At the second hospital, the average total cost was \$3.99 per patient with sharp curettage and \$3.09, or 23% less, with MVA. Hospitalization** constituted the largest portion of the average total cost per patient at both institutions; personnel costs were the second greatest contributor. Even when hospitalization costs were excluded, the average per patient cost was still lower for MVA at both hospitals, dropping 41% and 4%, respectively.



Average patient stay (i.e., length of hospitalization) was notably shorter with MVA. In the first Kenyan hospital, total stay was 76% less for MVA patients: 23.9 hours compared to 100.7 hours for sharp curettage. At the other hospital, MVA patients spent 49% less time in the hospital than sharp curettage patients, 20.7 hours versus 40.9 hours.

Mexico

Two Mexican hospitals experienced similar savings. At the first hospital, the average cost of treating a patient with sharp curettage was \$143.25. Using MVA cost only \$65.73 per patient—a drop of more than half. At the second hospital, the average cost to treat an MVA patient was \$17.53, 28% less than the \$24.27 it cost the facility to treat a sharp curettage patient.

Hospital stay was also reduced markedly by MVA. At one hospital, average hospital stay for sharp curettage patients was 20.6 hours; the average stay for MVA patients was 11.4 hours, a decrease of 45%. At the second facility, average stay was 35.6 hours for sharp curettage patients; time spent in the hospital fell to 26.8 hours for MVA patients, a drop of 25%.

Ecuador

Changing patient management practices in conjunction with introducing MVA was a critical factor in all four countries. The study results from three sites in Ecuador particularly highlighted the need for such changes to take full advantage of the resource-saving potential of the technology. In Ecuador, MVA was used in two hospitals but with very different patient management protocols. The third hospital used sharp curettage.

The average cost of treating a patient suffering from incomplete abortion was lower at the hospital using sharp curettage than at either MVA site. This may be partially due to the expense of purchasing and resterilizing MVA instruments; these costs were not calculated for sharp curettage. Also, unusually long post-operative stays, and subsequently high hospitalization costs, were a major factor at one of the hospitals using MVA. In addition, the three hospitals from which data were collected are administered by different public sector authorities, so it is difficult to make meaningful cost comparisons.

At the hospital using sharp curettage, women waited an average of 5.6 hours for treatment and were discharged 3.7 hours after completion of the procedure. At one MVA hospital, women waited an average of 2.4 hours for care; following the procedure, they remained in the

* All costs were converted from local currency to U.S. dollars at the time each study was completed (1991 or 1992).

** Hospitalization included indirect costs associated with an overnight stay, such as laundry, meals, and utilities. The definition and calculation of indirect costs varied by health care system.

hospital an average of 10.6 hours, primarily for administrative, not medical, reasons. At the second institution using MVA, which offered outpatient treatment for incomplete abortion, women waited an average of 1.2 hours for treatment and left the hospital an average of 30 minutes after the procedure.

The study results underscored the importance of efficient patient management. Prompted by the study's findings, administrators of the first hospital using MVA have identified ways to decrease women's unnecessarily long post-operative stay and thus reduce the overall cost of abortion care to the facility.

United States

This study compared electric vacuum aspiration and manual vacuum aspiration. MVA was performed in the emergency room or a room in the labor, delivery, and recovery area, while electric vacuum aspiration was performed in the operating room.

Cost calculations in the U.S. were based on charges to the patient. Performing MVA in an area other than the operating room dramatically lowered the average charge, from \$1,437 with electric vacuum aspiration to \$778 with MVA. Charges for anesthesia, hospital room, and sterile supplies were all notably less. The procedure costs included medical residents' time but not anesthesiologists' fees; the difference in cost between MVA and electric vacuum aspiration would have been even greater if these fees had been included.

MVA reduced average hospital stay by almost 70%, from 19 hours for electric vacuum aspiration patients

to 5.8 hours for MVA. Procedure time was lowered from 31.8 minutes with electric vacuum aspiration to 13 minutes with MVA. MVA took less time primarily because it was simpler to set up instruments, initiate the aspiration procedure, and obtain the specimen from the syringe for examination.

In the U.S. study, performing MVA outside the operating room required fewer resources and resulted in time savings for patients and clinicians alike. The U.S. study confirmed that patient management practices—particularly where the procedure is performed—have a vital impact on the cost of care and length of stay.

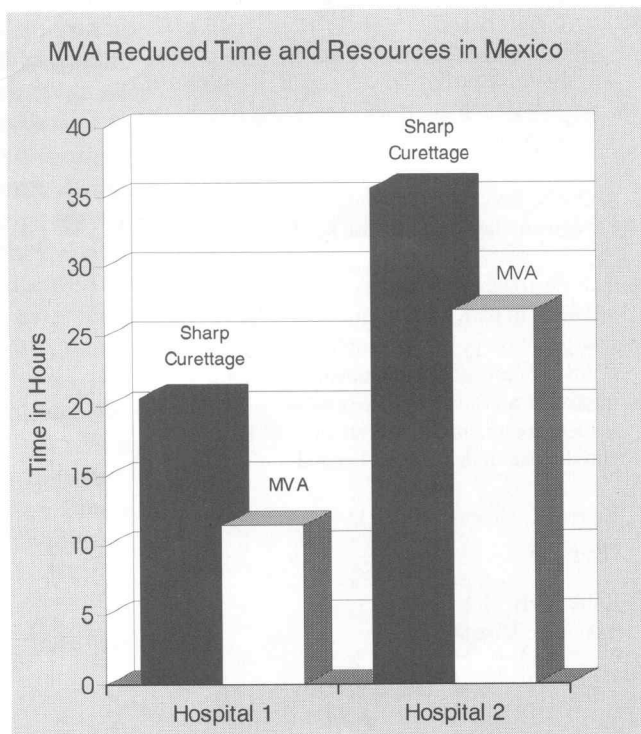
How Does Use of MVA Reduce Resource Utilization?

The studies in Kenya, Mexico, and the United States showed that adopting MVA can dramatically decrease average cost as well as length of hospital stay for treatment of incomplete abortion. Results from all four countries highlighted the importance of changing management of patient care to realize optimum benefits.

Several attributes of MVA enhance the potential to reduce resource use and hospital stay, primarily by facilitating cost- and time-saving changes in patient

management. For example, MVA is usually practiced with lower levels of pain control than sharp curettage, which means that women require less personnel time (e.g. anesthesiologists and nurses) during the procedure and less post-operative monitoring. Similarly, MVA patients can usually leave the hospital sooner than sharp curettage patients, thus reducing expenses related to both personnel time and hospitalization.

While sharp curettage is commonly performed in an operating room, MVA services are often provided in other areas of the hospital that are more accessible and less expensive to use. Bypassing the operating room avoids a highly specialized unit that is usually in great demand. Moving abortion care out of the operating room facilitates prompter treatment and shorter hospital stays, which result in resource savings.



The cost of adopting MVA can seem significant because of initial instrumentation purchases, introduction of new sterilization/disinfection protocols, and the expense of replacing worn instruments. But the studies found that total savings from introducing MVA more than offset these expenditures. At one Kenyan hospital, the cost differential between MVA and sharp curettage was \$10.01 per patient. Assuming an annual caseload of 570 patients (based on hospital records), the potential annual resource savings at this hospital would be appreciable: \$5,706. Calculations at a Mexican hospital result in even higher potential annual savings of \$46,512.

Actual monetary savings following introduction of MVA may not be apparent, however, because the resources that a health system saves are often immediately consumed by other operating expenses. When use of space, time, personnel, drugs, and supplies for treating incomplete abortion is reduced, these resources may be directed instead to maternity, post-abortion family planning, and other obstetrics/gynecology services.

How Can Use of MVA Improve Quality of Care?

The characteristics of MVA that can lower resource use can also facilitate improvements in quality of care. For example, moving treatment for abortion complications out of the operating room expedites care, reducing risks to women's health and decreasing waiting time. This is especially important since women suffering from incomplete abortion are often perceived as low-priority cases in comparison to other patients requiring treatment in the operating room.

When heavy sedation has been the standard practice for sharp curettage patients, use of lower but adequate levels of pain control with MVA can reduce women's risk of complications related to anesthesia. Being alert during the procedure also allows women to be more involved in their care. Finally, when lower levels of pain control are used, hospitals can adapt their discharge protocols to allow women to return to their normal activities sooner. In some hospitals, physicians authorize discharge for incomplete abortion patients only

once a day, causing needlessly long hospital stays. If physicians complete release forms immediately after the procedure, rather than during their next scheduled rounds, however, women can leave as soon as they feel able.

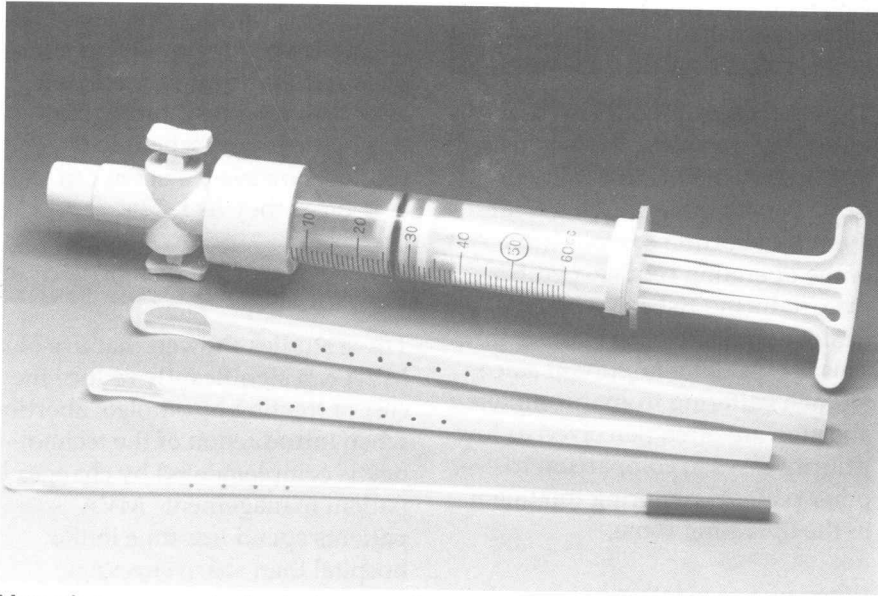
Conclusion

These studies showed that use of MVA can significantly reduce the cost of treating incomplete abortion when introduction of the technology is complemented by changes in patient management. MVA patients spend less time in the hospital than sharp curettage patients because waiting and recuperation times are shorter. At the same time, use of MVA facilitates improvements in the quality of patient care.

Changes in patient management—specifically, the location of service delivery and discharge protocols—can decrease resource use associated with any procedure for treating incomplete abortion, including sharp curettage. Long-standing medical practices (such as sharp curettage) tend to become highly institutionalized, however, and providers may be less inclined to change patient management practices associated with a procedure that is so ingrained in the system. Introducing a new technology such as MVA offers a unique opportunity to re-evaluate patient management practices and to make changes that can cause striking improvements in both resource use and quality of care.

Characteristics of Practice by Method

Characteristic	Manual Vacuum Aspiration	Sharp Curettage
Location	Exam room, emergency area, or ob/gyn operating room	General operating room or ob/gyn operating room
Pain Control Measures	Lower level of pain control medication. (Mild sedation, analgesia, and/or local anesthesia are all used at times.)	Higher level of pain control medication. (Heavy or mild sedation, analgesia, and/or local anesthesia are all used at times.)
Level of Provider	Gynecologist, general physician, or trained paramedical personnel under supervision	Gynecologist, general physician
Hospital Stay	Less than one day	One or more days



Manual vacuum aspiration instruments for uterine evacuation use flexible cannulae and a locking 60cc syringe. Indications for use are: endometrial biopsy, treatment of incomplete abortion and first trimester abortion/menstrual regulation.

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The following resources provide greater detail on the studies:

Johnson, B.R. et al. Costs and Resource Utilization for the Treatment of Incomplete Abortion with Dilation and Curettage and Manual Vacuum Aspiration in Kenya, Mexico, and Ecuador. *World Bank Working Paper*, forthcoming.

Blumenthal, P.D. Operational Acceptability and Cost Analysis of Management of Incomplete Abortion Using Manual Vacuum Aspiration, 1992, unpublished.

Study Design & Methodology

- 13 study sites (hospitals) in Kenya, Mexico, Ecuador, and the United States
- Sample of patients with first-trimester incomplete abortion and no other major complications
- Duration of stay obtained by patient observation and/or record review
- Costs of drugs and medication, salaries, resterilization, equipment, etc., obtained from health system and hospital records
- Average duration of hospital stay and cost of treatment with MVA and sharp curettage calculated.

The methodology used in the studies described in this article is applicable to a variety of medical procedures and diverse settings. *A Guide to Assessing Resource Use*, a manual for conducting the cost study, is forthcoming and can be obtained by contacting IPAS.

Acknowledgments

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