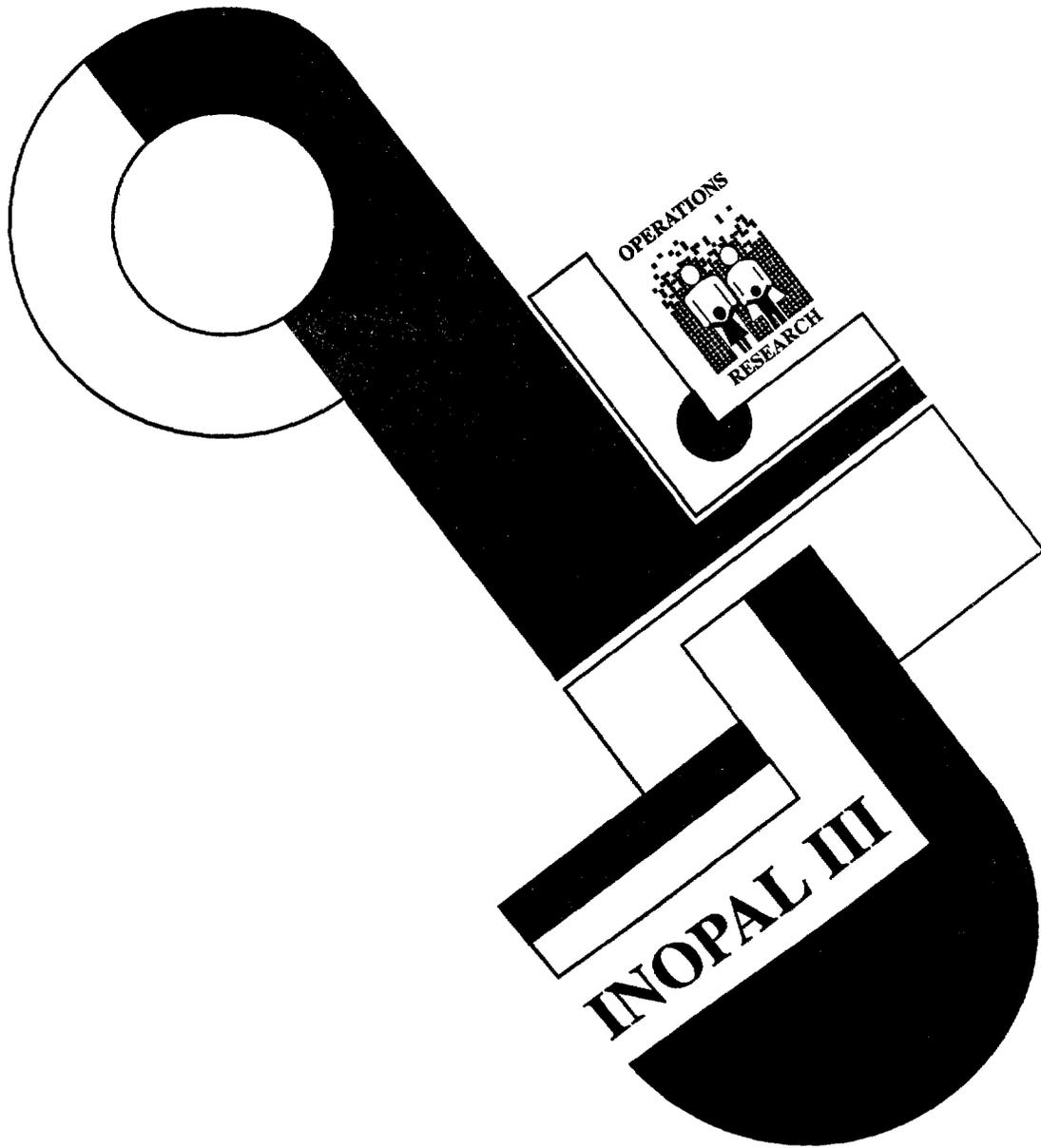


FINAL REPORT



**TECHNICAL SUPPORT FOR THE INTERNATIONAL POS-
ABORTION CARE OPERATIONS RESEARCH PROGRAM
(THE DATAPAC PROJECT)**

IPAS

INOPAL III

FINAL REPORT

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Four DATAPAC Technical Working Groups were formed to review selected data collection instruments in the series. Participants included:

DATAPAC Technical Working Groups

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EXECUTIVE SUMMARY

A workshop on postabortion care operations research (PAC OR) conducted in hospital settings was convened in September 1995 in Washington, DC. Participants included approximately 25 representatives from USAID, Cooperating Agencies and other international agencies. A key outcome of the workshop was the identification of the need for a set of core data collection instruments for use in PAC OR projects in various countries and settings. Researchers also expressed a strong desire for the opportunity to explore with their colleagues the many methodological challenges inherent in PAC OR. In response, the INOPAL III project entitled, "Technical support for the international postabortion care operations research program", was awarded to Ipas. Later named "DATAPAC", this project was designed to meet the following four, interrelated, goals

- 1 Archive of PAC OR reports and publications,
- 2 Secondary analyses of PAC OR studies,
- 3 A set of standardized ("core") questionnaires, and,
- 4 Dissemination of PAC OR resources

An archive was created at Ipas to store copies of reports, publications, presentations, protocols, blank questionnaires, and electronic datasets from past PAC OR studies. The archive currently has over 100 titles. Resources from the archive were used as the basis for two comparative analyses of PAC OR, including a review of cost and resource use studies and also a review of PAC OR in Latin America (LAC) since 1993. The cost studies review was presented at the Annual Meeting of the American Public Health Association (Indianapolis, November 1997) and also the Global PAC OR Meeting (New York, January 1998), while the review of PAC OR in the LAC will be a chapter in the forthcoming INOPAL III Final Report. In addition to these presentations and publications of DATAPAC materials, a DATAPAC website (<http://datapac.ipas.org>) has also been developed. Users of the website can view resources from over 20 PAC OR studies and also request copies of the listed items.

In order to draw on the vast experience and expertise of researchers conducting PAC OR, four Technical Working Groups (TWGs) were formed with representatives from 15 organizations based in Africa, Asia, Latin America, and the United States. These TWGs were responsible for reviewing the core questionnaires and other documents related to the DATAPAC Project. Developed by Ipas and the Population Council, seven core questionnaire instruments and instruction guides were reviewed by the TWGs, including an overview guide, general information questionnaire, case record review form, cost study manual, patient exit interview, observation guide, and inventory checklist. These modules were then translated into Spanish and pretested in three hospitals in Peru.

INTRODUCTION

Complications during pregnancy affect millions of women worldwide each year, nearly 600 000 of these women die as a result ¹ Women face many risks during pregnancy and childbirth, including *abruptio placentae*, *placenta previa*, preeclampsia as well as complications such as hemorrhage and infections arising from unsafe abortion practices Over 70 000 women are estimated to die each year as a consequence of unsafe induced abortion, and more women die in childbirth, some of whom might have lived if they had had access to safe abortion Many more women suffer permanent injuries, chronic pain, and sterility related to their unsafe abortion procedures Unsafe induced abortions are estimated to result in 13% of pregnancy-related deaths in developing countries, with the vast majority of deaths occurring in less developed countries This estimate climbs to as much as 25% of all maternal deaths in some countries ² Most figures underestimate the impact of unsafe abortion because unsafe spontaneous abortion estimates are not used

Unsafe abortions occur in every country because induced abortion services are often illegal, too expensive, or otherwise inaccessible Women therefore tend to seek induced abortions from unskilled and poorly equipped providers Complications arising from spontaneous and unsafe abortions lead millions of women around the world to emergency rooms each year seeking PAC services Postabortion care is defined as

- 1) emergency treatment services for complications of spontaneous or unsafely induced abortion,
- 2) postabortion contraceptive counseling and method provision, and,
- 3) links between emergency abortion treatment services and comprehensive reproductive-health care ³

In order to improve PAC services and thereby help reduce the incidence of maternal morbidity and mortality, INOPAL III has sponsored several operations research (OR) studies evaluating PAC quality of care and costs A major component of the sub-contract between INOPAL III and Ipas is the development and implementation of the DATAPAC project Given the global interest in PAC and the initiation of a number of OR projects by various agencies, DATAPAC is a mechanism to provide guidance to researchers on methodologies, data collection and analysis and topics for investigation

DATAPAC's objectives under this subcontract were to 1) create an archive of PAC OR materials (reports, publications, blank questionnaires, etc), 2) conduct secondary analyses of PAC OR completed to date, 3) develop standardized protocols and data collection instruments for studying PAC OR in a variety settings, and, 4) disseminate the items described in Objectives #1-3 The development of DATAPAC has been a team process coordinated by Ipas and broadly involving the Population Council, USAID, Cooperating Agencies and other international organizations DATAPAC was designed to create a body of knowledge that is useful to researchers, policymakers, administrators, international donors, and others interested in improving the reproductive health of women worldwide

OBJECTIVE #1: PAC OR ARCHIVE

The first objective of this project was to gather resources relevant to PAC OR for inclusion in the DATAPAC Archive. After culling PAC OR materials from the Ipas library, a search of MEDLINE and POPLINE was conducted. Key words included “operations research”, “postabortion care”, “PAC”, “OR”, “incomplete abortion”, “missed abortion”, and other related terms. The reference lists from these articles were then searched by hand to identify any additional PAC OR materials not yet located. Concurrently, a letter signed by George Brown and Forrest Greenslade was sent to numerous individuals and organizations involved with research on PAC, contraceptive counseling, reproductive health, and other related topics. Based on this effort, over 100 reports, presentations, articles, and other materials were submitted for inclusion in the DATAPAC Archive (Annex 1). The archive is maintained in a Microsoft Access database and currently includes over 100 items from 17 countries in Africa, Asia, and Latin America. Some materials are available in English, Spanish, and Portuguese.

The archive primarily contains unpublished final reports and articles from non-peer-reviewed journals. One of the goals for this project was to collect electronic datasets to facilitate secondary analyses and perhaps combine the data from several studies into a single dataset. To date, DATAPAC only has access to a few datasets. The lack of electronic data can probably be explained by the following three factors:

1. For studies already completed for some time, it is likely that the investigators no longer have access to any Epi-Info, Excel, SPSS, or other dataset files from the study. Moreover, in some PAC OR studies the statistics were calculated by hand so that no electronic datasets exist for these studies.
2. For studies only recently completed, the researchers have not completed primary analysis, and thus they may yet be prepared to submit their data for inclusion in DATAPAC. In fact, we encouraged researchers to submit their data only after they had finished all intended analyses and had submitted any manuscripts for publication. Therefore, there might be a delay of months or years from the time data collection is completed and the dataset is ready for submission to the DATAPAC Archive.
3. Finally, sharing data is still uncommon in most areas of health research, and some researchers have expressed misgivings about providing their datasets to DATAPAC. One researcher noted an inability to gain permission from Ministries of Health to send the data out of country.

Of the datasets included in the archive, all but one come from studies conducted by Ipas. As the number of datasets in the archive grows, it is hoped that researchers will be more willing to submit their data as well.

OBJECTIVE #2: SECONDARY ANALYSES OF PAC OR

The second objective of this project was to use the materials in the DATAPAC Archive to produce secondary analyses of PAC OR studies conducted to date. Therefore, two manuscripts and one brief report were produced and presented in a variety of locations.

The first piece was a comparative analysis of PAC OR cost and resource use studies conducted in Africa and Latin America since 1991 entitled, "Comparing costs of postabortion care services across regions The DATAPAC Project" (King TDN, Benson J, Billings D, et al) (Annex 2) This was presented to over 75 people at the Annual Meeting of the American Public Health Association in November 1997 This presentation was then expanded to include data from more studies and converted into a manuscript in advance of the Global Meeting on PAC Advances and Challenges in Operations Research and submitted in December 1997 (King TDN, Benson J, Stein K) (Annex 3) The Global Meeting on PAC actually took place in New York in January 1998, for which the comparative analysis was again revised to include additional data from recently completed studies (Annex 4) The comparative analysis of cost studies currently includes data from 21 studies and is being finalized for submission to a peer-reviewed journal in the Fall of 1998 A brief summary of this article will also appear in the Population Council publication *Alternatives* in the August 1998 (King TDN and Benson J) (Annex 5)

The second comparative analysis summarized data from all types of PAC OR conducted in Latin America but was focused primarily on projects funded under INOPAL III (Annex 6) The review, "Postabortion care in Latin America A summary of operations research, 1993-1998" (King TDN, Billings DL, Friedman AB, Benson J), will serve as a chapter in the forthcoming INOPAL III Final Report This analyses included data from 17 studies from eight countries and included the following themes clinical practices, patient counseling, contraceptive services and costs and resource use This manuscript will be revised to include more discussion of non-INOPAL III studies and submitted to a peer-reviewed journal in the Fall of 1998

Both of these secondary analyses were descriptive in nature and contained no inferential statistical testing Reports of PAC OR studies traditionally have not included measures of dispersion (standard deviations, confidence intervals, ranges, etc) which prevents any formal meta-analytic techniques being employed Further, as discussed under Objective #1, DATAPAC has only obtained a few electronic datasets, and thus it is impossible to calculate measures of dispersion post hoc

OBJECTIVE #3: CORE QUESTIONNAIRES

DATAPAC Core Questionnaire Series

In addition to facilitating secondary analyses, the DATAPAC Archive also served as the basis for developing standardized PAC OR data collection instruments The primary goal of developing standardized, or "core", instruments and protocols was to provide guidance on designing and conducting quantitative PAC OR studies It was also hoped that core instruments would lead to more comparable and generalizable research findings Data collection instruments from the DATAPAC Archive thus were reviewed to find common themes and questions and draft core instruments were developed Although the original scope of work for the DATAPAC Project called for four core instruments, seven core instruments and instruction guides were developed These core instruments evolved into

the *DATAPAC Core Questionnaire Series* (Annexes 7 and 8)

The DATAPAC Core Questionnaire Series is in modular form that currently includes

Overview	GUIDE TO USING THE DATAPAC CORE QUESTIONNAIRE SERIES FOR POSTABORTION CARE OPERATIONS RESEARCH A general guide for designing and implementing PAC OR.
Module 1	GUIDE TO USING THE GENERAL INFORMATION QUESTIONNAIRE FOR POSTABORTION CARE PATIENTS A brief questionnaire designed to uniquely identify study participants and sites
Module 2	GUIDE TO USING THE CLINICAL CASE REPORT FORM FOR POSTABORTION CARE PATIENTS A questionnaire for documenting the clinical presentation of PAC patients and their course of treatment as recorded in patient charts and other records
Module 3	GUIDE TO ASSESSING RESOURCE USE IN THE PROVISION OF POSTABORTION CARE A series of questionnaires designed to document resource use and cost of providing PAC services
Module 4	GUIDE TO USING THE POSTABORTION CARE PATIENT EXIT INTERVIEW A questionnaire for assessing the quality of PAC services from the patient's perspective, including measures of pain and understanding of PAC counseling messages
Module 5	GUIDE TO OBSERVATION OF POSTABORTION CARE SERVICES An observation checklist for assessing the quality of PAC clinical practice including issues such as infection control, pain management, and information given to patients
Module 6	GUIDE TO USING THE POSTABORTION CARE SUPPLIES & EQUIPMENT CHECKLIST An inventory of supplies and equipment necessary for providing PAC services

These instruments and guides are quantitative in design and do not address qualitative research methodologies such as open-ended interviews or focus groups. The *General Information Questionnaire* (Module 1) is the backbone of the series, collecting general information designed to uniquely identify study participants and sites. It is intended for use with all PAC OR studies that are designed based on this series. For example, researchers designing a PAC "Cost Study" could consult both the *Guide to Assessing Resource Use in the Provision of Postabortion Care* (Module 3) as well as the *Guide to Using the General Information Questionnaire for Postabortion Care Patients* (Module 1). The instruments included in the DATAPAC Core Questionnaire Series are meant to serve as templates and may need to be modified for each study to reflect differences in treatment practices and study sites.

DATAPAC Technical Working Groups

Once the draft core instruments were completed, Technical Working Groups (TWGs) were created to review and revise the core instruments. The TWGs were comprised of over 30 members representing 15 organizations involved in women's reproductive health research. The TWGs were divided into four groups—Clinical, Cost and Resource Use, Patient and Provider Perspectives, and Statistical—and each TWG was given responsibility for reviewing one or more core instruments (Table 1).

Table 1 Assignment of DATAPAC Core Questionnaire Modules to TWGs

Module	Technical Working Groups			
	Clinical	Cost	Perspectives	Statistical
Overview				✓
1				✓
2	✓			
3		✓		
4			✓	
5	✓		✓	
6	✓			

Members of the TWGs were mailed drafts of the core instruments for comment, and TWG meetings were held at Ipas in North Carolina (Cost and Resource Use, Patient and Provider Perspectives) and also at the Population Council in New York (Clinical). The purposes of these meetings were to address any unresolved issues and to finalize the English versions of each questionnaire. Due to scheduling conflicts, the Statistical TWG was not able to meet and thus unresolved issues concerning the Overview and Module 1 were discussed via teleconferencing, mail, and e-mail.

Pretesting

Once the core questionnaires were reviewed and revised in English, they were translated into Spanish for pretesting in Peru. The modules were pretested in three hospitals in metropolitan Lima, Peru, including Hospital Carrion, Maternidad de Lima, and Maria Auxiliadora. As the *Guide for Assessing Resource Use in the Provision of PAC Services* (Module 3) was a revision of a methodology used at over 20 sites in Latin America and Africa, we decided not to pretest this module in Peru. The breakdown of pretesting is presented in Table 2. In total, the various modules were administered 71 times.

Table 2 DATAPAC Core Questionnaire Pretesting in Peru, by module and site

Site	Module					Total
	1	2	4	5	6	
Daniel Carrion	4	5	3	2	6	20
Maternidad de Lima	5	6	6	5	3	25
Maria Auxiliadora	6	6	4	4	6	26
Total	15	17	13	11	15	71

Incorporation of findings from these pretests have been completed in the English and Spanish versions of the modules.

The modified project plan originally called for pretesting the DATAPAC Modules in Latin America, Africa, and Asia. However, after discussions with Ian Askew (Director of Africa OR/TA), John Townsend (Director of Asia/Near East OR/TA), and Dale Huntington (Population Council-Cairo), we decided to limit pretesting to Peru. Although sufficient funds were available from each of the OR/TA projects for pretesting, the Directors felt that there was insufficient time to mount even modest projects in their

regions However, they also indicated that pretesting could be accomplished under FRONTIERS

OBJECTIVE #4: DISSEMINATION

In addition to the papers and presentations described under Objective #2, three other major dissemination pieces were completed as part of the scope of work for DATAPAC

- 1 Over 400 copies (200 each in English and Spanish) of the DATAPAC Core Questionnaire Series will be provided to organizations and individuals interested in PAC OR (Annex 7 and 8)
- 2 An abstract on the DATAPAC Project was accepted by the American Public Health Association for its annual meeting in November 1998 in Washington, DC The poster is entitled, "Standardizing postabortion care operations research The DATAPAC project" (King TDN, Benson J, Stein K, Foreit J) (Annex 7) This poster will help introduce viewers not only to DATAPAC but also to PAC OR in general
- 3 DATAPAC Website Phase 1 of the DATAPAC Website is now online at ([http://datapac ipas org](http://datapac.ipas.org)) Phase 1 allows Worldwide Web users to read an overview of the DATAPAC Project and view a list of available DATAPAC resources Users may then e-mail a request for copies of PAC OR questionnaires, reports, articles, and datasets Eventually, users will be able to download DATAPAC Core Questionnaire Series modules and other materials directly from the website Finally, the website solicits feedback from users about ways to improve the core questionnaires, the need for additional translations or new modules, and other issues related to the design, implementation, and analysis of PAC OR Since coming online in July of 1998, the DATAPAC website has logged over 100 visitors to the site

FUTURE DIRECTIONS

As DATAPAC is a resource for people interested in PAC OR, there will hopefully be a need for DATAPAC as long as there is a need to reduce maternal mortality associated with unsafe induced and spontaneous abortions The following four steps are recommended in order for DATAPAC to better serve researchers, administrators, and policymakers

- 1 With the eminent completion of the OR/TA projects in Africa, Asia, and Latin America (INOPAL III), the number of resources pertinent to DATAPAC is expanding rapidly The DATAPAC Archive should continue to grow to include resources from these and other studies as they are completed
- 2 As the archive grows, opportunities for additional secondary analyses will arise, such as a comparative analysis of patient exit interviews
- 3 As researchers begin to use the *DATAPAC Core Questionnaire Series* to help design PAC OR studies, comments on how to improve or expand the series will surface Already Ipas has received requests to add modules to the series, including a guide to conducting PAC focus groups and open-ended interviews and a brief (1-page) case record review form (CRF) for ambulatory PAC patients Other modules are also needed such as a provider interview, a questionnaire for administrators and policymakers, and data collection instruments for PAC services provided outside of

tertiary health centers

- 4 Disseminating DATAPAC and PAC OR should continue to be a top priority Both means can be achieved by modestly improving the website such as making more archived materials available for downloading

With the exception of pretesting each DATAPAC Core Questionnaire Series module in Africa and Asia, all of the objectives for the DATAPAC Project were either met or exceeded We now have a model for providing PAC OR resources in multiple languages to health researchers and policymakers throughout the world

REFERENCES

¹ World Health Organization. New Estimates of Maternal Mortality *Weekly Epidemiological Record* 13 (71) 97-104, 29 March, 1996

² World Health Organization. Abortion. A tabulation of available data on the frequency and mortality of unsafe abortion, 2nd edition. WHO/FHE/MSM/93.13 Geneva, 1994

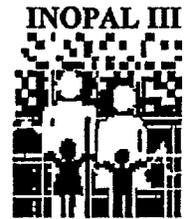
³ Greenslade FC, McKay H, Wolf M, McLaurin K. Post-abortion care. A women's health initiative to combat unsafe abortion. *Advances in Abortion Care* 1994, 4: 1-4



**APADATOS:
Base de datos internacionales sobre la
Investigación Operativa en Atención
Postaborto**

Ipas Carrboro, Carolina del Norte

ANNEX 1



Cada año, las complicaciones durante el embarazo afectan a millones de mujeres en el mundo entero. Como resultado, aproximadamente 600 000 de esas mujeres mueren (1). La mujer corre muchos riesgos durante el embarazo y el parto, entre ellos *abruptio placentae*, *placenta previa*, la preeclampsia y las complicaciones, tales como la hemorragia y las infecciones, resultantes del aborto practicado en condiciones inadecuadas. Se calcula que más de 70 000 mujeres mueren cada año como consecuencia del aborto que ocurre en condiciones de riesgo (2). A nivel mundial, se calcula que los abortos en condiciones de riesgo son responsables del 13% de las muertes relacionadas con el embarazo, la gran mayoría de las muertes ocurre en los países en desarrollo (2).

Para ayudar a tratar este asunto crítico de la salud, la Agencia de los Estados Unidos para el Desarrollo Internacional (USAID), varias fundaciones privadas y otras agencias internacionales han financiado más de 30 estudios de investigación operativa (IO) en atención postaborto (APA) a partir de 1990 en África, Asia y América Latina. En estos estudios se han investigado formas para maximizar la calidad de los servicios de APA a la misma vez que se minimizan los costos y recursos usados. Los individuos y las agencias participantes en la IO en APA han convenido en que 1) se necesita una base centralizada de datos sobre los estudios de APA y 2) se debe desarrollar "cuestionarios estandarizados" para usarse en los proyectos de IO en APA en varios ámbitos a nivel nacional. Una base centralizada de datos facilitaría los análisis de la IO, tanto intraregionales como interregionales, y el uso de "cuestionarios estandarizados" llevaría a resultados de investigación que podrían compararse y generalizarse mejor.

En colaboración con la USAID, el Population Council y otras organizaciones, Ipas está coordinando la creación de los cuestionarios centrales y compilando datos y documentos de respaldo de todos los estudios disponibles sobre la IO en APA. Este proyecto es conocido como "APAdatos".

APAdatos puede usarse para dirigir análisis secundarios que investiguen preguntas tales como "¿Cuál es la edad promedio de las mujeres que reciben servicios de APA en México?" o "¿Cómo se comparan los costos de los servicios de APA en África, Asia y América Latina?" Además, APAdatos proporciona a los investigadores un medio de difundir

¿Que es APAdatos?

APAdatos es un proyecto cuyo objetivo es facilitar la IO en APA, al ofrecer los siguientes recursos (puede ser que algunos de estos no estén disponibles en español)

- **Base de datos de la IO en APA** Una base electrónica de datos para llevar a cabo análisis secundarios sobre los estudios disponibles en la IO en APA
- **Documentos de respaldo** Copias de los protocolos, cuestionarios en blanco, informes, publicaciones y otros documentos que resulten de los estudios incluidos en la base de datos
- **Cuestionarios centrales** Nuevos cuestionarios "estandarizados" sobre la IO en APA y protocolos en inglés y español, incluso un instrumento sobre el costo/utilización de recursos, cuestionario para la paciente, entrevista con el profesional de salud y guía para observar la prestación de servicios. Pueden usarse "tal cual" o modificarse según sea necesario, cuando se elaboren nuevos estudios

ampliamente los resultados de su investigación que es benéfico a los sistemas de salud tanto locales como nacionales, así como a la comunidad internacional de salud reproductiva. A fin de garantizar el carácter confidencial de las personas que participaron en los estudios originales, todos los identificadores personales, tales como los nombres, los códigos de identificación y las direcciones, tanto de las pacientes como de los profesionales de salud, se omitirán de la base de datos APADatos.

Cualquier persona que esté llevando a cabo investigación operativa en APA puede entrar en contacto con Ipas por teléfono, fax o correo electrónico a fin de pedir documentos o datos. La utilidad de APADatos se medirá por su extensión. Por lo tanto, instamos a toda persona que esté dirigiendo investigación operativa en APA a que nos envíe sus datos y documentos de respaldo para que podamos incluirlos en APADatos.

Para mayor información, por favor comuníquese con

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- 1 World Health Organization New Estimates of Maternal Mortality, *Weekly Epidemiological Record*, 13(71) 97-104, 29 March 1996
- 2 World Health Organization Abortion A tabulation of available data on the frequency and mortality of unsafe abortion, 2nd edition WHO/FHE/MSM/93 13 Geneva, 1994

Available DATAPAC Resources

Item #	Title/Authors/Description	Country	Date	Media*
DATAPAC Core Questionnaire Series and Manuals				
01-0001	Guide for Using the General Information Questionnaire for Postabortion Care Patients King TDN, Benson J, Stein K, et al Ipas Carrboro, NC 1998 English (Summer 1998)		1998	P, D
01-0002	Guide to Assessing Resource Use for the Treatment of Incomplete Abortion Abernathy M, Hord C, Nicholson LA, et al Ipas Carrboro, NC 1993 English, Spanish, Portuguese (In revision)		1993	P, D
01-0003	Guide to Using the Clinical Case Record Form for Postabortion Care Patients Ipas Carrboro, NC 1998 English. (Summer 1998)		1998	P, D
01-0004	Guide to Using the Postabortion Care Patient Exit Interview Ipas Carrboro, NC 1998 English (Summer 1998)		1998	P, D
01-0005	Guide to Assessing Clinical Practice in the Provision of Postabortion Care Observation Guide and Checklist. Ipas Carrboro, NC 1998 English (Summer 1998)		1998	P, D
Other PAC Questionnaires				
02-0001	Several instruments used at the Hospital Carrón in Lima, Peru Includes Case Record Form, Patient Exit Interview, Cost Study questionnaires, and Observation of Clinical Services Spanish.	Peru	1997	P, D
02-0002	Postabortion Family Planning Study Includes Exit Interview for Women who Came for Treatment of Incomplete Abortion, Interview of Staff Providing Treatment of Incomplete Abortion Services, Interviewer Guidebook. English	Kenya	1996	P
02-0004	Ghana Mothercare Applied Research Project. Includes Community Leaders' Interview; Policy Maker Interview; Interview with Women Treated for Incomplete Abortion in District Hospitals; Interview with Doctor s, Nurses, and Midwives who Manage Incomplete Abortion Patients in Districts Hospitals, Interview with Supervisors of Midwives Based in Public Sector Health Centers and Private Maternity Homes, Interview with Midwives Based in Public Health Centers and Private Maternity Homes English.	Ghana	1996	P
02-0005	Egyptian Fertility Care Society Includes Counseling Husbands Study Questionnaire, Interview Schedule for Physicians Providing Postabortion Services, Exit Interview for Women who Came for Treatment for Incomplete Abortion, Interview Schedule for Nurses and Social Workers Providing P1996ostabortion Services	Egypt	1996	P
02-0006	Postabortion Case Load Study Includes Medical Record Form.	Egypt		P
PAC Reports, Presentations and Publications				
03-0001**	Studying Unsafe Abortion A Practical Guide Maternal and Newborn Health/Safe Motherhood Unit. Division of Reproductive Health World Health Organization 1996 Geneva		1996	P
03-0002	Estimating Cost of Postabortion Services at Aurelio Valdivieso General Hospital Oaxaca, Mexico Brambila C, Gracia C, Heimbürger A Presented at Global Meeting on Postabortion Care Advances and Challenges in Operations Research. New York 19-21 January 1998	Mexico	1998	P
03-0003	Comparing the cost of Postabortion Care in Africa and Latin America The DataPAC Project King T, Benson J, Stein K Presented at Global Meeting on Postabortion Care Advances and Challenges in Operations Research. New York 19-21 January 1998	Africa/ Latin America	1998	P

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03-0016	Technical Report of Baseline Phase An Operations Research Project to test an Integrated, Hospital-Based Model of Treatment for Abortion complications and Delivery of Family Planning in Peru Benson J, Huapaya V, Abernathy M, Nagahata J INOPAL III (Population Council & Ipas) Unpublished.	Peru	1997	P

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03-0021	Comparing Costs of Postabortion Care Services Across Regions The DataPAC Project. King TDN, Benson J, Billings D, et al American Public Health Association Annual Meeting, Indianapolis, IN 9-14 November 1997		1997	P
03-0022	Final Technical Report of Baseline Phase Estimating Cost of Post-Abortion Services General Hospital Valdivieso Oaxaca, Mexico Brambila C, Gracia C INOPAL III Unpublished	Mexico	1997	P
03-0023	Cost and Resources Utilization for the Treatment of Incomplete Abortion in Kenya and Mexico Johnson B, Benson J, Bradley J Ordoñez A. Soc Sci Med 1993 36(11) 1443-53	Kenya/ Mexico	1993	P
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03-0026	Costos de la Atención Postaborto Hospital Daniel A Carrón, Callao - Peru Juárez L, Benson J, Huapaya V, et al Autosostenimiento Financiero de los Servicios de Salud Reproductiva Conferencia Regional	Peru	1997	P
03-0027	A Cost-Benefit Analysis of First Trimester Abortion Procedures with Manual Vacuum Aspiration and Uterine Curettage at Municipal Hospital Dr Arthur Ribeiro de Saboya Sao Paulo, S P, Brazil Rogers P Ipas Unpublished	Brazil	1995	P
03-0028	Results of a Pilot Project to Improve Postabortion Care in Paraguay Evaluating Cost and Quality of Care Abernathy M, Aquino S, Chaparro J Unpublished.	Paraguay	1996	P
03-0029	Training Non-Physician Providers to Improve Postabortion Care Baseline Assessment of Postabortion Care Services in Four Districts of Eastern Region, Ghana.	Ghana	1997	P
03-0030	Improving the Counseling and Medical Care of Post Abortion Care Patients in Egypt.	Egypt	1995	P
03-0031	Postabortion Case Load Study in Egyptian Public Sector Hospitals final Report.	Egypt	1997	P
03-0032	An Exploratory Study of the Psycho-social Stress Associated with Abortions in Egypt Final Report. Huntington D Nawar L Hady DA	Egypt	1995	P
Electronic Datasets				
04-0001	Hospital Carrion. Various datasets from Care Record Form review, Patient Exit Interview, & Cost Study (SPSS, Epi-Info, Excel)	Peru	1997	D
04-0002	IMSS Postabortion Care Study	Mexico	1997	D
04-0003	Postabortion Family Planning Project	Kenya	1997	D

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Item #	Title/Authors/Description	Country	Date	Media*
04-0004	Cost-Benefit Study of First Trimester Abortion Procedures with Manual Vacuum Aspiration and Uterine Curettage at Municipal Hospital Dr Arthur Ribeiro de Saboya	Brazil	1995	D

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Comparing Costs of Postabortion Care Services Across Regions: The DATAPAC Project

**King TDN,¹ Benson J,¹ Billings D,¹ Johnson BR,¹ Solo J,²
Huapaya V,³ Fuentes J,⁴ Brambila C,⁵ & Abernathy M¹**

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American Public Health Association Annual Meeting
Indianapolis, Indiana

12 November 1997



Introduction: *Why do cost studies?*

- **Improve quality of care**
- **Improve efficiency**
- **Potential major savings**
- **Policy implications**



Methods 1: *Selection criteria*

- **Studies using “Ipas” methodology**
 - **Patient observation**
 - **Patient selection criteria**
 1. **Incomplete abortion**
 2. **12 or less weeks uterine size**
 3. **No other complications**
- **Designs: Pre/post & “Case-control”**

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The logo for Ipas, featuring the word "Ipas" in a stylized, handwritten font above a graphic of a woman's silhouette.

Methods 2: *Key indicators*

1. Treatment duration

- **Pre & Post-procedure**
- **Who is spending time with patient?**

2. Cost (in US\$)

- **By labor, supplies, overhead**



Results 1: *Eligible PAC OR studies*

Year(s)	Country	Site(s)	n	Study Design
1991	Ecuador	3	27	Case-control
1991	Kenya	4	99	Mixed
1991	Mexico	5	74	Mixed
1991-92	Mexico	1	21	Pre/post
1995	Brazil	1	16	Pre/post
1996-97	Mexico	1	≈11	Pre/post
1996-97	Kenya	3	31	Case-control
1997	Peru	1	17	Pre/post



Results 2: *Mean duration of treatment (hours)*

Procedure	Sites	Total n	Mean Duration (Range)	Weighted Mean
D&C	16	160	29.4 (9.2-100.7)	28.4
MVA	10	128	18.1 (1.7-35.8)	20.6
Difference				7.8
%				-27.4%

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Results 3: *Mean duration of treatment (hours)*

Procedure	Sites	Total n	Mean Duration		Weighted Mean	
			Pre	Post	Pre	Post
D&C	13	140	13.8	16.5	11.5	17.4
MVA	8	109	6.4	10.5	7.7	11.0
Difference			7.4	6.0	3.8	6.4
%			-52.3	-36.4	-32.9	-37.0

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Results 4: *Mean costs by procedure (US\$)*

Procedure	Sites	Total n	Mean Cost (Range)	Weighted Cost
D&C	16	160	86.52 (3.06-235.90)	87.35
MVA	10	128	13.85 (2.94-65.73)	10.75
Difference				76.60
%				-87.7%



Results 5: *Mean procedure & hospitalization costs*

Procedure	Sites	Total n	Mean Cost (US\$)		Weighted Mean	
			Pro	Hosp	Pro	Hosp
D&C	12	129	39.46	66.57	37.11	65.53
MVA	7	99	7.58	5.19	5.44	3.67
Difference			31.88	61.39	31.67	61.85
%			-80.8	-92.2	-85.3	-94.4



Discussion 1: *Comparing MVA & D&C*

- **Generally, MVA use reduces:**
 - **Duration of patient treatment**
 - **Costs to facility & patient, particularly hospitalization costs**
- **Adoption of MVA occasionally increases costs & duration of treatment – why?**



Discussion 2: *Study limitations*

- **Small sample sizes and non-randomized designs impact validity & generalization**
- **Minor differences in protocol implementation**
- **Little data on integrating family planning & other reproductive health services with PAC**



Discussion 3: *What is DATAPAC?*

- Database of studies
- Library of reports & study documents
- Standardized “core” instruments

- How to get more info on *DATAPAC*?

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DATA PAC
International Database of
Operations Research on
Postabortion Care



Timothy D N King, MSPH, Janie Benson, MPH

Complications during pregnancy affect millions of women worldwide each year, nearly 600 000 of these women die as a result ¹ Women face many risks during pregnancy and childbirth, including *abruptio placentae*, *placenta previa*, preeclampsia as well as complications such as hemorrhage and infections arising from unsafe abortion practices Over 70 000 women are estimated to die each year as a consequence of unsafe abortion ² Worldwide, unsafe abortions are estimated to result in 13% of pregnancy-related deaths, with the vast majority of deaths occurring in less developed countries ²

To help address this critical health issue, the United States Agency for International Development (USAID), private foundations, and other international agencies have funded over 30 postabortion care (PAC) operations research (OR) studies since 1990 in Africa, Asia, and Latin America PAC is defined as 1) emergency treatment services for postabortion complications, 2) postabortion family planning counseling and services, and, 3) links between emergency abortion treatment and comprehensive reproductive-health care ³ These studies have investigated ways to maximize the quality of PAC services while minimizing the costs and resources used A consensus has emerged among individuals and agencies involved in PAC OR that 1) a centralized database of PAC studies is needed, and, 2) "core questionnaires" should be developed for use in PAC OR projects in various country settings A centralized database would facilitate inter- and intra-regional OR analyses, while using "core questionnaires" would lead to more comparable and generalizable research findings

In collaboration with USAID, the Population Council, and other organizations, Ipas is coordinating the development of core questionnaires as well as compiling data and supporting documentation from all available PAC OR studies This project is called "DATA PAC"

DATA PAC can be used to conduct secondary analyses investigating questions such as "What is the mean age of women receiving PAC services in Mexico?" or, "How do the costs of PAC services compare in Africa, Asia, and Latin America?" In addition, DATA PAC provides researchers a means to disseminate widely the results of their research that is beneficial to both to local and national healthcare systems as well as the wider international reproductive health

What is DATA PAC?

- **PAC OR database** An electronic database for conducting secondary analyses of available PAC OR studies
- **Supporting documentation** Copies of protocols, blank questionnaires, reports, publications and other documents resulting from the studies contained in the database
- **Core questionnaires** New "standardized" PAC OR questionnaires and protocols in English and Spanish, including a cost/resource utilization instrument, patient questionnaire, provider interview, and service delivery observation guide For use "as is", or may be modified as needed, when designing new studies

community In order to ensure the confidentiality of those who participated in the original studies, all personal identifiers such as names, ID codes, and addresses for both patients and providers will be deleted from the DATAPAC database

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Anyone conducting PAC OR research may contact Ipas by telephone, fax, or e-mail to request documentation and/or datasets. A website is also being developed. DATAPAC is currently scheduled for release in January 1998, although some resources such as photocopies of data collection instruments are already available. The utility of DATAPAC will be related to its comprehensiveness. Therefore, we strongly encourage investigators involved in PAC research to provide their data and supporting documentation to Ipas so that they can be included in DATAPAC.

*DATAPAC is funded by the USAID under the INOPAL III contract awarded to the Population Council (Contract number AID/CCP - 3030-C-00-5007-00). DATAPAC is administered under a subcontract to Ipas, Inc.

¹ World Health Organization. New Estimates of Maternal Mortality. Weekly Epidemiological Record 13 (71) 97-104, 29 March, 1996

² World Health Organization. Abortion. A tabulation of available data on the frequency and mortality of unsafe abortion, 2nd edition. WHO/FHE/MSM/93.13 Geneva, 1994

³ Greenslade FC, McKay H, Wolf M, McLaurin K. Post-abortion care. A women's health initiative to combat unsafe abortion. Advances in Abortion Care 1994, 4: 1-4

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Comparing the Cost of Postabortion Care in Africa and Latin America: The DataPAC Project*

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¹Ipas, ²Population Council

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*A version of this paper in earlier form was presented at the American Public Health Association Annual Meeting in Indianapolis, Indiana, 9-13 November 1997.

ABSTRACT

Objective To compare results of operations research studies conducted in Africa and Latin America on the costs and resources used in the emergency treatment of incomplete abortion. The cost-effectiveness of switching from Sharp Curettage (SC) to Manual Vacuum Aspiration (MVA) to treat incomplete abortion is evaluated.

Methods Studies were included if they incorporated direct observation of patients treated for incomplete abortion and recruited women who were estimated at 12 weeks or less uterine size who had no other complications (sepsis, uterine perforation, etc). Measures discussed in this analysis include average length of patient stay (ALOS) and the costs (US\$) of the MVA or SC and hospitalization.

Results Twenty-one studies met the inclusion criteria, with the majority of data coming from Mexico (n=9) and Kenya (n=7). Eleven of the studies were part of multi-site, case-control designs, while the remaining studies were part of pre- and post-intervention studies. These studies included a total of 296 patients, 160 and 136 of whom were treated using SC and MVA, respectively. Based on the full dataset (both case-control and pre- and post-intervention studies combined), switching to MVA to treat incomplete abortion reduced ALOS by an average of 37.0% and costs to the clinic by 87.7%. To partially control for unmeasured bias in these weighted averages, we did a subset analysis of only pre- and post-intervention studies (n=43 for SC, n=50 for MVA), and found that using MVA lead to an approximately 50% drop in both ALOS and treatment costs.

Discussion: Although all of the studies included in this comparative analysis were non-randomized and very small, the pooled data indicate that switching to MVA results in

substantially lower treatment costs and shorter ALOS. It is important to note that the cost-effectiveness of switching to MVA is reduced or even eliminated when unaccompanied by adequate provider training and reorganization of service delivery. More data need to be collected on out-of-pocket expenses to the patient as well as the cost of providing family planning and gynecologic services when appropriate.

INTRODUCTION

Emergency treatment of the consequences of unsafe abortions generates many “costs” – costs to providers, hospitals, and to society, in terms of the tremendous burden on the health care system that is generated by an estimated 20 million unsafe abortions per year worldwide ¹ In fact, some hospitals have estimated that more than one-half of their obstetric and gynecology budgets are expended to provide emergency treatment of incomplete abortions ² Then, there are the costs to each patient--not only out-of-pocket expenses but also the “cost” of lost wages Finally, there are the human “costs” of morbidity and mortality associated with unsafe abortion When researchers discuss the cost of postabortion care (PAC), however, we normally limit our scope to the hospital’s cost to treat incomplete abortion

Several types of studies have traditionally fallen under the rubric of a “cost study” Some studies have simply noted any fees charged for treating incomplete abortion and assumed this is equivalent to the true cost of providing services Other studies have interviewed providers and administrators to record their impressions on the costs of treating incomplete abortion ³ More sophisticated approaches include the WHO/PAHO Methodology⁴ and the Ipas “Guide to assessing resource use in the treatment of incomplete abortion” ⁵ The WHO/PAHO methodology requires a review of the hospital’s financial, administrative, and personnel records to estimate funds expended by the hospital related to the treatment of incomplete abortion Also using a record review to estimate costs of supplies, salaries and overhead, the Ipas methodology further incorporates direct observation of patients and their time spent interacting with providers

to estimate the “cost-per-bed-minute”, which is then used to estimate the total cost to the hospital for treating incomplete abortion. While one study reported that the WHO/PAHO and Ipas methodologies yielded comparable estimates of cost,⁶ the direct observation of patients involved in the Ipas methodology provides additional data that can be used to reorganize delivery of postabortion care services.

Since 1990, several studies have been conducted using the Ipas methodology.^{2,6,11} These studies typically sought to estimate the patient’s Average Length of Stay (ALOS) and the cost to the hospital of treating incomplete abortion. The ultimate goal of these studies was to demonstrate the cost-effectiveness of switching from the standard practice of treatment, Sharp Curettage (SC), also called Dilatation & Curettage (D&C), to Manual Vacuum Aspiration (MVA). Manual Vacuum Aspiration is an equally effective and safer method of uterine evacuation after a spontaneous or incomplete induced abortion.¹² Sharp Curettage is routinely performed in an operating theater upon heavily sedated or anaesthetized women while, in uncomplicated cases, MVA may be administered in an examining room on lightly sedated women.

METHODS

A comparative analysis of operations research studies on the costs and resources used for the treatment of incomplete abortion was completed using data gleaned from published and unpublished sources. These sources included one published, peer-reviewed journal article,² with the remaining data excerpted from interim and final reports.^{6,10}

Several criteria were used to select cost studies eligible for inclusion in this comparative analysis. Each study was completed since 1990 using the "Ipas Method"⁵. This methodology includes direct observation of services from the time the patient arrives until she leaves the hospital. Participant inclusion criteria included only those women receiving treatment for incomplete abortion of twelve weeks or less uterine size as determined by bi-manual exam. Women were excluded if presenting with other complications (e.g. sepsis, uterine perforation, shock, etc.). The rationale for excluding cases with other complications was that these cases, although rare, are expensive to treat so that including them would inflate the cost estimates and therefore bias the results in favor of the treatment group (MVA or SC) that happened to have the least number of complicated cases.²

One-half of the data sources used in this analysis described multi-site studies. For the purpose of this analysis, each site in a multi-site study constitutes one "study". In some studies, some women were treated with MVA and others with SC, depending upon factors such as physician preference, uterine size, or the time a woman arrived at the hospital.^{2,7} Three such studies were excluded because they combined data from SC and MVA patients in their reports.⁷ Also, in one study, both MVA and Electric Vacuum Aspiration (EVA) were used to treat incomplete abortion.⁹ Where possible, we included only data collected from women treated with MVA during the post-intervention phase of the study.

In each study, data were collected as part of a rapid assessment by observing a small sample of patients treated for incomplete abortion, usually 10-15 women, from the time

they arrived at the hospital until they were discharged and left. Sample sizes were intentionally small as studies that involve patient observation are difficult and expensive to implement. Furthermore, anecdotal evidence suggests that patients presenting at each site with uncomplicated incomplete abortions do not vary substantially from one another. Therefore, the little information that would be gained from larger sample sizes could not be justified by the necessary study budget increases. Data collectors recorded the amount of time (minutes) patients spent with each type of provider (physician, nurse, student nurse, etc), as well as the amount and type of equipment, medications, and supplies used during the treatment of each patient. In addition, hospital financial records were used to estimate hospitalization costs, or cost-per-bed-minute, personnel costs and costs of drugs, supplies, and equipment.

The studies included both *pre- and post-intervention* and *case-control* designs. Pre- and post-intervention studies generally included baseline data collection of women treated with SC, an intervention consisting of training in MVA and ideally reorganization of services, and then follow-up data collection of women treated with MVA to measure the impact of the intervention. Case-control studies were defined as those that included one or more “control” sites using standard protocols for provision of PAC services (SC used in the operating theater with heavy sedation) compared with a site or sites that have introduced the use of MVA in a procedure room with light sedation (cases).

Regardless of design, these studies were focused on two main outcomes – average length of stay (ALOS) and the cost to the hospital or clinic for emergency treatment of

incomplete abortion Durations were recorded in minutes and then converted to decimal hours ALOS generally included time from arrival until the patient was discharged and left the hospital and, depending upon the study, was sub-divided into waiting time, procedure time, and recovery time, which were generally defined

- *Pre-procedure waiting time* time spent waiting before being treated for incomplete abortion,
- *Procedure time* time spent in the procedure area including the duration of the SC or MVA procedure itself, and,
- *Post-procedure recovery time* time spent in the hospital from completion of the treatment procedure until the women left the hospital

Some studies combined the waiting time and procedure time and reported the sum as “pre-procedure” duration ²

The total cost of treating the incomplete abortion generally included the cost of the procedure coupled with the cost of hospitalization, which were generally defined

- *Procedure costs* amortized cost of the MVA or SC instruments, and costs of re-sterilization supplies, disposable supplies such as gauze, sedation and pain medication, and,
- *Hospitalization costs* typically included overhead costs, including patient meals, linens, utilities, and the cost of staff salaries

Hospitalization costs included estimates of “cost-per-bed-minute”, which take into account hospital overhead (costs of utilities, linens, patient meals, general supplies) and staff salaries. Due to poor record keeping, overhead costs were the most difficult to estimate and varied the most from site to site. Staff were usually divided into three categories: 1) primary staff were those who performed the SC or MVA procedure, 2) secondary staff such as nurses and anesthesiologists who assisted the providers, and, 3) tertiary staff such as kitchen and janitorial staff². The cost-per-bed-minute estimates were multiplied by the observation of length of stay and then coupled with procedure costs to estimate the total cost to the facility for treating incomplete abortion. Data on the cost to the patient for emergency treatment of incomplete abortion, which might include patient fees, transportation costs, and out-of-pocket supplies and medications charges, were rarely documented in these studies and therefore not reflected in this analysis.

Finally, in a subset analysis, we estimated ALOS and cost using only those data collected as part of pre-and post-intervention studies. This was done for several reasons, including 1) to avoid potential biases inherent in case-control designs, 2) to control for differences in the “buying power” of the US dollar in different geographic locations, and, 3) to control for differences in the exchange rates on various currencies against the US\$ from 1991 through 1997. As none of the studies reported estimates of data dispersion (i.e. variances, standard deviation, confidence intervals, etc.) around the main measures of effect, we were not able to pool the data and conduct a standard meta-analysis. Therefore, throughout this analysis, changes in ALOS and costs are reported as weighted averages.

and percentage differences, without any statistical testing of the differences between outcomes

RESULTS

Selected Studies

Based on the study selection criteria, 21 studies were included in this analysis (Table 1). These studies were conducted in Mexico (9), Kenya (7), and Ecuador (3), with one study each in Brazil and Peru. Studies ranged in sample size from 3 to 45 participants, and a total of 296 women participated in the studies included in this analysis (mean sample size = 14.1, 95% CI 9.9-18.3). Sample sizes tended to be slightly larger in MVA studies, with an average 13.6 women compared with 10.0 women in SC studies ($p = n.s.$). Most (81%) of the studies were part of multi-site studies, with only four studies focusing on a single site (Peru, Mexico1, Brazil, Mexico2). Studies were split nearly equally between case-control and pre- and post-intervention designs, 52 and 48 percent, respectively.

Average Length of Stay (ALOS)

Although ALOS is typically subdivided into pre-procedure, procedure, and post-procedure durations, very few studies reported the procedure times separately. Those that did reported that the MVA procedure took on average slightly less than twenty minutes,¹⁰ while the SC procedures averaged approximately ten minutes longer.^{8,10} As the procedure time is relatively short and does not typically vary for uncomplicated cases, we will focus on pre- and post-procedure durations in the remainder of this section. It therefore follows that ALOS is not equal to the sum of pre- and post-procedure durations for two reasons: 1) ALOS includes the procedure time, as well as pre- and post-procedure times, and, 2)

some studies reported only ALOS without disaggregating the results into pre- and post-procedure waiting times. Therefore, more data were available for estimating ALOS than its aggregates. As ALOS among those patients for whom pre- and post-procedure waiting times were also reported (n=249) did not vary substantially from those studies reporting only ALOS (n=288), the ALOS reported here was calculated from the full dataset (n=288)

Overall, ALOS was almost one-third longer for patients treated with SC than with MVA (Table 2). This difference was shared proportionately by longer average waiting times for SC patients before the procedure (3.8 hours, or 32.9% less time for MVA patients) as well as longer recovery times post procedure (6.4 hours, or 37.0% less time for MVA patients). For both patients treated with SC and with MVA, approximately one-third of ALOS was spent waiting for treatment, and two-thirds of the ALOS was spent in recovery and waiting to be discharged.

Cost to Treat Incomplete Abortion

As patients who were treated using MVA spent, on average, less time in the hospital, it is not surprising that the cost of treating incomplete abortion tends to be lower for facilities that treat incomplete abortion with MVA (Table 3). For SC patients, treatment of incomplete abortion averaged approximately US\$ 87, with approximately one-third of costs attributable to the cost of the SC procedure itself and the remaining two-thirds going towards hospitalization. In contrast, the cost of treating incomplete abortion with MVA averaged less than US\$ 11, with 60% and 40% of the costs being accounted for by the procedure and hospitalization, respectively. Based on data from the full dataset

(n=296), use of MVA reduced the cost of treating incomplete abortion to the facility by, on average, 88%. This substantial savings may be attributed equally to the reduced costs of the procedure itself (85% reduction) as well as the post-procedure hospitalization (94% reduction) when replacing treatment of incomplete abortion with MVA.

Pre- and Post-Intervention Studies

In a subset analysis, we analyzed ALOS and total costs using only those data collected as part of pre-and post-intervention studies. Five studies were located which reported both baseline (SC) and follow-up (MVA) data from the same site^{2,9,10}. From these studies, 85 and 93 patients were available for the analysis of ALOS and costs, respectively. Overall, switching to MVA reduced ALOS by approximately one-half (range 24.5-76.3%) (Table 4). Similar results were found for cost of incomplete abortion, where switching to MVA reduced costs by 43.6% (range 22.6-69.1%) (Table 5). Reported data were insufficient to disaggregate the cost and ALOS estimates further.

DISCUSSION

Overall, pooled data from over twenty studies in five countries indicate that switching from SC to MVA to treat incomplete abortion results in substantially reduced ALOS and costs. As some studies have reported that as much as 60% of a hospital's total obstetric and gynecologic budget is spent treating the complications of unsafe abortion,² adopting MVA can free up a tremendous amount of scarce resources that can then be spent improving other services.

It is important to note, however, that the cost-effectiveness of switching to MVA is subverted when unaccompanied by adequate provider training and reorganization of service delivery. For example, two reports have documented instances where MVA has been less cost-effective than SC for the treatment of uncomplicated incomplete abortion.^{7,11} In one instance, a case-control study (n=14 MVA, n=13 SC) in Ecuador reported that costs were actually 27% higher at the two MVA sites (cases) than the SC site (control).¹¹ The second instance involves baseline data (follow-up data not yet published) from two SC sites (n=15) and one MVA site (n=16) in Kenya.⁷ In preliminary analysis on just the baseline data, the MVA site reported 31% greater costs than the weighted average of the two SC sites. Both of these studies were case-control in design with sample sizes too small (n=27 and 31) to allow statistical control of covariates. It is therefore impossible to determine statistically whether the differences in costs were due to use of MVA or SC, or due to other factors unrelated to the treatment procedure.

However, regardless of the potential impact of bias on the results of these two studies, anecdotal reports suggested that costs and ALOS increased because the hospitals switched to MVA without reorganizing delivery of services. In the Ecuadorian example, MVA at one site was provided on an outpatient basis and ALOS was reduced to under two hours! At the other MVA site, women were required to wait for 10.5 hours on average for a physician's approval for discharge, which normally came the morning after the procedure. In this study, simply switching to MVA without updating hospital discharge policies resulted in no net benefit in terms of ALOS and costs. In the Kenyan example, the site where women were treated with MVA had only one MVA kit.⁷

Researchers reported that, due to the inadequate supply of MVA equipment, women were required to wait longer periods for treatment, which again inflated ALOS and subsequently treatment costs. The critical need to reorganize services was further illuminated by pre- and post-intervention studies in Kenya.² In two hospitals, moving the treatment procedure from the operating theater (SC) to a treatment room on the gynecology ward (MVA) was the main factor contributing to the reduction of pre-procedure wait times--54.5% less at one site and 88.1% less at the other for MVA patients. This finding has been replicated in a study in the United States where, mainly due to moving treatment from the operating room (EVA) to the emergency room or labor ward (MVA), ALOS and costs were reduced by 70.6% and 41.1%, respectively.¹³

Several factors exist which could bias the results reported here. At least one of the studies recruited women who were greater than 12 weeks uterine size,⁶ and one study included both women who were treated with MVA or Electric Vacuum Aspiration (EVA) during the post-intervention data collection phase.⁹ In the former study, there was a tendency for women treated with SC to have greater uterine sizes ($p < 0.05$), and women treated with SC were excluded from the follow-up data collection. Anecdotally, risks of complications and costs seem to rise with advancing gestation, so that the true cost of treating patients with MVA may have been underestimated. In the later case, EVA was on average more expensive than MVA, so that combining the treatment groups lead to an underestimate of the benefit of the switching to MVA. Overall, given the number of studies and participants in the pooled dataset, we think it unlikely that these potential sources of bias could have a major impact on the findings of the analysis.

More generally, none of the studies we located randomized study sites to case or control sites, nor were women randomized into treatment groups in single-site studies. Ultimately, as has been discussed regarding the effectiveness of family planning programs,¹⁴ the absence of true experimental designs with randomization casts doubt on the interpretation of much of the research conducted on the cost-effectiveness of treating incomplete abortion with either SC or MVA. Although randomization is the best method to counter selection bias, as adopting MVA ideally includes a complete reorganization of service delivery, it is untenable to randomize women into treatment groups in most settings. Therefore, the best alternative to randomization is to design a study with sufficient sample size to statistically control for any covariates. However, sample sizes were small and based entirely upon convenience, and thus sample sizes were inadequate (mean = 14.1) to identify or evaluate covariates. Even with the risk of bias from non-randomization and large variances of the main effect measures due to small sample sizes, the very large differences in ALOS and total costs (Tables 2-5) suggest that bias alone could not account for the benefits the studies in our analysis have reported when switching to MVA. Similarly, given the average 50% drop in ALOS and costs in these quasi-experimentally designed studies, it is likely that, had randomized cost studies been conducted, the cost-effectiveness of adopting MVA would have been borne out.

Some questions have been raised about the strict patient selection criteria used in these studies, especially the exclusion of women presenting with major complications such as sepsis. Although septic abortion is relatively uncommon in hospitals, women with

infection do present and vacuum aspiration has been effective in treating these women ¹⁵

It follows that, although treating women presenting with major complications from an unsafely induced abortion are more expensive to treat, the use of MVA would continue to be the most cost-effective means of uterine evacuation

Based on the review of these reports on the cost of treating incomplete abortion, we have several recommendations for future cost and resource use research. Although we were able to locate over 20 studies, we found little data from African countries other than Kenya, and no data from Asia. While it is likely that MVA would be more cost-effective in almost all settings, cost and resource use studies have proven to be an excellent tool to help inform policymakers and guide the reorganization of services that is needed to minimize the cost of treating incomplete abortion while maintaining or improving services. With few exceptions, ^{6,7} data are also lacking on the costs of adding family planning counseling to postabortion care services, and no studies have explored the costs associated with referring women for other gynecologic services such as Pap smear screening or testing for sexually transmitted infections. Finally, few studies have sought to estimate the costs to the patient. ^{6,7} Out-of-pocket expenses is certainly a great deterrent to women seeking adequate care for complications arising from unsafe abortion.

In regards to study methodology, we would also like to present the following recommendations for future research. Researchers seem to be moving away from the case-control design to the pre- and post-intervention design (Table 1), and this is advisable in order to reduce the risk of bias. Due to case-loads, the difficulty of fielding studies with direct patient observation, and the funds required to conduct cost research, it

is likely that cost and resource use studies will necessarily remain small. Therefore, sample sizes will be too small to justify statistical testing. Nevertheless, researchers should begin to report variances and confidence intervals for their effect measures. Finally, we recommend that, in order to better protect the women who participate in these studies, researchers request written rather than verbal consent before enrolling women in any postabortion care research.

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Table 1 Eligible cost and time-motion studies, by year, country, design and status

Year	Country	N	Design	Status	Source
1997	Peru	17	Pre/Post	Ongoing	Benson et al
1996	Kenya1	11	Pre/Post	Ongoing	Ominde et al
1996	Kenya2	4	Pre/Post	Ongoing	Ominde et al
1996	Kenya3	16	Pre/Post	Ongoing	Ominde et al
1996	Mexico1	11 ^a	Pre/Post	Ongoing	Brambila & Garcia
1995	Brazil	16 ^b	Pre/Post ^c	Complete	Rogers
1992	Mexico2	21	Pre/Post	Complete	Quarto
1991	Ecuador1	13	Case-control	Complete	Johnson et al (1992)
1991	Ecuador2	11	Case-control	Complete	Johnson et al (1992)
1991	Ecuador3	3	Case-control	Complete	Johnson et al (1992)
1991	Mexico3	16	Case-control	Complete	Johnson et al (1993)
1991	Mexico4	12	Case-control	Complete	Johnson et al (1993)
1991	Mexico5	11	Case-control	Complete	Johnson et al (1993)
1991	Mexico6	4	Case-control	Complete	Johnson et al (1993)
1991	Mexico7	15	Case-control	Complete	Johnson et al (1993)
1991	Mexico8	3	Case-control	Complete	Johnson et al (1993)
1991	Mexico9	13	Pre/Post ^c	Complete	Johnson et al (1993)
1991	Kenya4	27	Pre/Post	Complete	Johnson et al (1993)
1991	Kenya5	16	Pre/Post	Complete	Johnson et al (1993)
1991	Kenya6	11	Case-control	Complete	Johnson et al (1993)
1991	Kenya7	45	Case-control	Complete	Johnson et al (1993)

^a n varied by observation station

^b Included both MVA and EVA cases

^c MVA and SC were performed concurrently

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Table 2 Weighted average length of stay (ALOS) and range, by procedure (decimal hours)

Category	ALOS (decimal hours)		Difference (%)
	D&C [range] (n)	MVA [range] (n)	
Pre-procedure	11.5 [3.0-90.2] (140)	7.7 [1.2-11.6] (109)	3.8 (32.9)
Post-procedure	17.4 [3.7-29.6] (140)	11.0 [0.5-24.0] (109)	6.4 (37.0)
ALOS*	28.4 [9.2-100.7] (160)	20.6 [1.7-35.8] (128)	7.8 (27.4)

*Note: ALOS does not equal the sum of pre- and post-procedure costs because they were calculated from different datasets

Table 3 Weighted average cost to treat incomplete abortion and range, by procedure (US\$),

All cost studies

Category	Procedure Costs (US\$)		Difference (%)
	D&C [range] (n)	MVA [range] (n)	
Procedure	37 11 [2 26-70 17] (129)	5 44 [1 98-36 02] (99)	31 67 (85 3)
Hospitalization	65 53 [0 11-186 74] (129)	3 67 [0 06-29 71] (99)	61 85 (94 4)
Total Cost*	87 35 [3 06-23 90] (160)	10 75 [2 94-65 73] (128)	76 60 (87 7)

*Note Total Cost does not equal the sum of procedure and hospitalization costs because they were calculated from different datasets

Table 4 Mean ALOS (decimal hours) for treatment of incomplete abortion from studies with pre- and post-intervention designs, by procedure

Site	Year	Pre-intervention (D&C)		Post-intervention (MVA)		Difference (%)
		n	ALOS	n	ALOS	
Brazil*	1995	5	38.3	3	9.9	28.4 (74.1)
Mexico ²	1992	11	35.1	10	26.5	8.6 (24.5)
Kenya ⁴	1991	17	40.9	10	20.7	20.2 (49.4)
Kenya ⁵	1991	5	100.7	11	23.9	76.8 (76.3)
Mexico ⁹ *	1991	5	20.6	8	11.4	9.2 (44.9)
Weighted % difference →						49.9%

*These sites collected data from MVA and SC patients concurrently

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Table 5 Mean cost of treatment (US\$) of incomplete abortion from studies with pre- and post-intervention designs, by procedure

Site	Year	Pre-intervention (D&C)		Post-intervention (MVA)		Difference (%)
		n	Total cost (US\$)	n	Total cost (US\$)	
Brazil ^a	1995	5	78 38	11	24 20 ^b	54 18 (69 1)
Mexico2	1992	11	24 27	10	17 53	6 74 (27 8)
Kenya4	1991	17	3 99	10	3 09	0 90 (22 6)
Kenya5	1991	5	15 25	11	5 24	10 01 (65 6)
Mexico9 ^a	1991	5	143 25	8	65 73	77 52 (54 1)
Weighted % difference →						43 6%

^aThese sites collected data from MVA and SC patients concurrently

^bThis cost estimate includes data from three MVA patients and eight EVA patients

Comparing the Cost of Postabortion Care in Africa and Latin America: The DataPAC Project

King TDN,¹ Benson J,¹ Stein K²

¹*Ipas* ²*The Population Council*

Global Meeting on Postabortion Care: Advances and Challenges
New York 19-21 January 1998



Introduction 1: *What is a "cost study"?*

- Not just costs
- Time and motion studies
- Observation of clinical services

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Introduction 2: *Why do cost studies?*

- Potential major savings
- Improve efficiency
- Improve quality of care
- Larger policy implications

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Methods 1: *Selection criteria*

- Studies using “Ibas” methodology
 - Patient observation
 - Patient selection criteria
 - Incomplete abortion
 - 12 weeks or less uterine size
 - No other major complications
- Designs Pre/Post & “Case-control”

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Methods 2: *Key indicators*

- Average length of stay (ALOS)
 - Pre- & post-procedure
- Costs (in US\$)
 - Personnel, supplies, overhead

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Results 1: *Eligible PAC OR studies*

Year(s)	Country	Site(s)	n	Design
1997	Peru	1	34	Pre/Post
1996-97	Kenya	3	31	Case-control
1996-97	Mexico	1	36	Pre/Post
1995	Brazil	1	16	Pre/Post
1994	Egypt	2	85	Pre/Post
1991-92	Mexico	1	21	Pre/Post
1991	Mexico	5	74	Mixed
1991	Kenya	4	99	Mixed
1991	Ecuador	3	27	Case-control

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Results 2: ALOS (hours)

Pro- cedure	Sites	Total n	Mean (Range)	Weighted Mean
SC	18	210	26.2 (9.2-100.7)	24.8
MVA	14	205	16.0 (1.7-35.8)	17.5
			<i>Difference</i>	-7.3
			%	-29.5

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Results 3: ALOS by treatment phase (hours)

Pro- cedure	Sites	Total n	Mean ALOS		Weighted Mean		
			Pre	Post	Pre	Post	
SC	15	190	12.3	15.9	9.1	16.4	
MVA	12	186	5.4	9.3	6.1	9.8	
			<i>Difference</i>	-6.9	-6.6	-3.0	-6.7
			%	-56.3	-41.4	-33.1	-40.6

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Results 4: Mean costs (US\$)

Pro- cedure	Sites	Total n	Mean \$ (Range)	Weighted Mean \$
SC	18	210	82 10 (3 06-264 27)	73 22
MVA	14	213	24 55 (2 94-132 89)	28 51
			<i>Difference</i>	-44.71
			(%)	(-61 1%)

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Results 5: Mean procedure & hospitalization costs (US\$)

Pro- cedure	Sites	Total n	Mean Cost		Weighted Mean	
			Proc	Hosp	Proc	Hosp
SC	14	179	37 77	59 80	31 32	50 47
MVA	11	176	13 44	13 35	14 56	16 76
<i>Difference</i>			-24 33	-46 45	-16.76	-33.71
%			-64 4	-77 7	-53 5	-66.8

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Results 6: ALOS from studies with pre/post designs (hours)

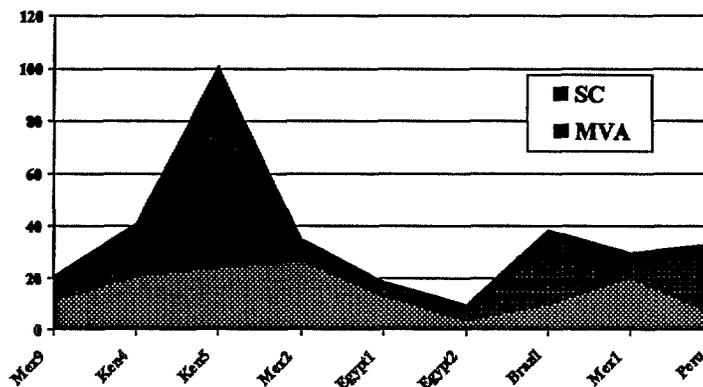
Site	Year	SC (n)	MVA (n)	% Difference
Peru	97	33.3 (17)	6.4 (17)	-80.8
Mexico1	96-97	29.9 (11)	20.1 (25)	-32.9
Brazil	95	38.3 (5)	9.9 (3)	-74.1
Egypt1	94	18.5 (35)	12.9 (23)	-30.4
Egypt2	94	9.4 (15)	3.5 (12)	-63.1
Mexico2	92	35.1 (11)	26.5 (10)	-24.5
Kenya4	91	40.9 (17)	20.7 (10)	-49.4
Kenya5	91	100.7 (5)	23.9 (11)	-76.3
Mexico9	91	20.6 (5)	11.4 (8)	-44.9
Weighted mean % difference=>				-48.5

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Ibas

Results 6: ALOS from studies with pre/post designs (hours)

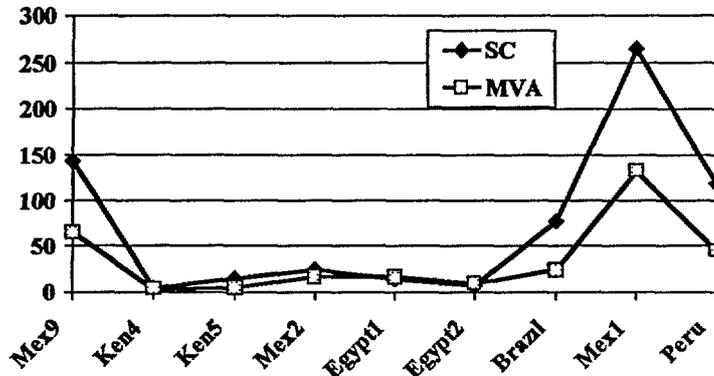


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Results 7: Mean costs from studies with pre/post designs (US\$)

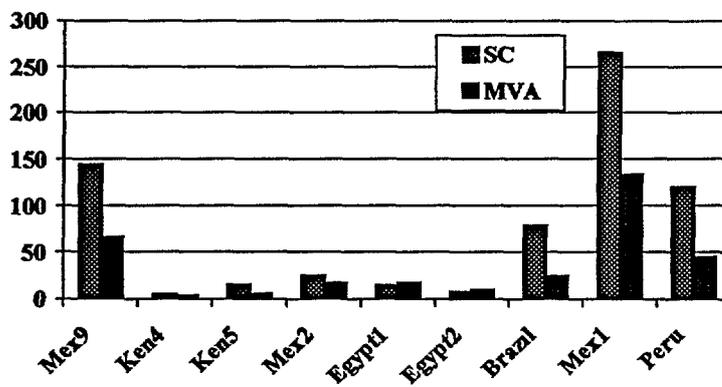


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Results 7: Mean costs from studies with pre/post designs (US\$)

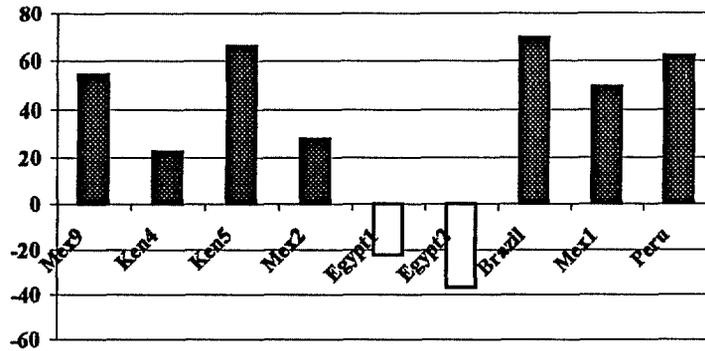


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Results 7: *Cost savings when switching to MVA based on data from studies with pre/post designs (%)*



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Results 7: *Mean costs from studies with pre/post designs (US\$)*

Site	Year	SC (n)	MVA (n)	% Difference
Peru	97	118 73 (17)	45 16 (17)	-62 0
Mexico1	96-97	264 27 (11)	132 89 (25)	-49 7
Brazil	95	78 38 (5)	24 20 (11)	-69 1
Egypt1	94	14 38 (35)	17 61 (23)	22 5
Egypt2	94	7 00 (15)	9 59 (12)	37 0
Mexico2	92	24 27 (11)	17 53 (10)	-27 8
Kenya4	91	3 99 (17)	3 09 (10)	-22 6
Kenya5	91	15 25 (5)	5 24 (11)	-65 6
Mexico9	91	143 25 (5)	65 73 (8)	-54 1
<i>Weighted mean % difference=></i>				-22 8

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Discussion 1: *Comparing MVA & SC*

- Generally, MVA use reduces
 - ALOS
 - Costs to facility
 - Costs to patients?
- Reorganization of services key
- MVA use sometimes increases costs --
Why?

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The logo for Ibas, featuring the word "Ibas" in a stylized font above a graphic of three horizontal lines that resemble a signature or a stylized "I".

Discussion 2: *Study limitations*

- Small sample sizes and non-randomized designs
- Differences in protocol implementation
- Little data on integrating FP & other reproductive health services, Costs to patients

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The logo for Ibas, featuring the word "Ibas" in a stylized font above a graphic of three horizontal lines that resemble a signature or a stylized "I".

Discussion 3: *Recommendations*

- Larger studies? True experimental designs?
- More rigorous analysis and reporting
- Pre/Post designs better
- Control for inflation
- More dissemination -- DataPAC!

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Hospitals Reduce Costs by Improving Postabortion Care

by Tim King and Janie Benson

The costs of unsafe abortion in terms of maternal morbidity and mortality are relatively well documented, but the financial cost of treating the consequences of unsafe abortion (e.g. incomplete abortion, infection, bleeding, physical trauma) is an issue little researched until recently. In many developing countries, incomplete abortion is typically treated in a hospital operating room using sharp curettage (SC, also called D&C). Patients are often anesthetized or heavily sedated and are therefore usually required to stay overnight to recover before discharge. However, data show that MVA is safer than and as effective as D&C for the treatment of incomplete abortion.

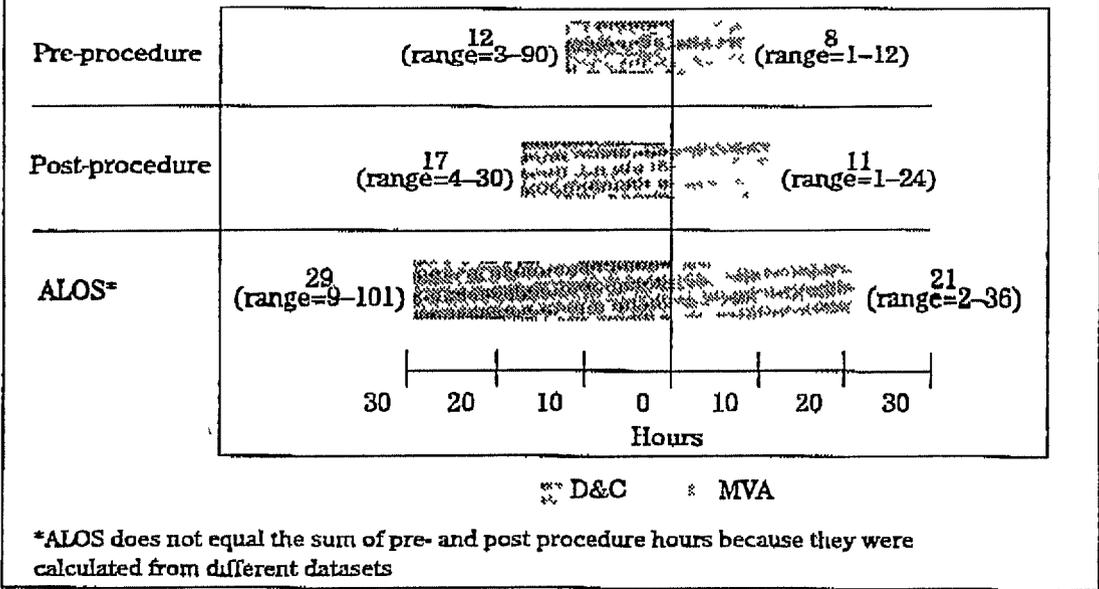
Using a cost study methodology developed by Ipas, 23 studies in six countries in Africa and Latin America have documented hospital costs for more than 400 women presenting with incomplete abortion. These studies involved

observing postabortion care services provided to women from the time they arrived at the hospital until they were discharged, and documented the amount of time spent with providers and the costs of supplies and medications used during treatment and recovery. Nine of these studies were pre- and post-intervention in design (data on D&C and MVA patients were collected at the same site), while the remaining studies were concurrent-control in design (data were compared between sites using D&C and sites using MVA).

Major findings

An analysis of the data from all 23 studies suggests that, when compared with women treated with D&C (n=210), women treated with MVA (n=213) had a one-third lower average length of stay (25.5 hours versus 17.5 hours respectively). The median cost of treating incomplete abortion per patient was US\$78.81 for D&C, and \$8.50 for

Figure 1 Average Length of Stay (ALOS) in Hours by procedure



switched to MVA, the mean cost of treating incomplete abortion actually increased by 22 percent and 36 percent at the sites

The mean cost increases were partially attributed to substantial improvements in the quality of services, including patient counseling, but were primarily due to the fact that MVA cannulae were not sterilized and reused as they are in most settings. In fact, providers in this study sometimes used more than

Median Cost of Treating Incomplete Abortion by Technique
 • D&C: US\$78.81 per patient
 • MVA: US\$8.50 per patient
 Source: pas, 1997

MVA patients, or 89 percent lower median costs for women treated with MVA. To control for potential bias inherent in small concurrent-control study designs, a subset analysis of the nine pre- and post-intervention studies (n=248) showed that switching to MVA significantly reduced the average length of stay from 36 to 15 hours per patient. Median costs per patient also fell 27 percent, from US\$24.27 to \$17.61. Generally, researchers found that the bulk of PAC costs, regardless of whether MVA or D&C was used, could be attributed to salaries and costs associated with in-patient, overnight stays. Researchers also noted that MVA training and reorganization of services were critical to reducing the patient stays and costs.

The importance of reorganizing services can best be illustrated by two studies where treating incomplete abortion cost more when using MVA than when using D&C. In pre- and post-intervention studies at two hospitals in Egypt, although the average patient stay fell when these hospitals

one cannula per procedure. In another study, a concurrent control study in Ecuador, patients receiving MVA at one site were detained on average 10.6 hours after their procedures, even though they had not been heavily sedated and therefore could have been safely discharged much earlier. These inefficient uses of MVA and case management procedures document the critical importance of training and reorganization of services in order to realize the potential cost-savings associated with this technique.

Most studies have demonstrated that adopting MVA, along with changes in organization of services such as treating incomplete abortion on an outpatient basis when medically appropriate, has improved the quality of postabortion care while reducing resource use and costs. Replacing SC with MVA has been shown to significantly reduce patients' average length of stay (see Figure 1), allowing women to return home or to work sooner and reducing the overcrowding that plagues many obstetrics and gynecology wards. Reducing resource use for postabortion care services allows overburdened staff and limited resources to be reallocated to other services. Although data collected thus far demonstrate the advantages of MVA, many issues remain unstudied. Postabortion care services also include postabortion family planning counseling and referral to other reproductive

Focus on Methods Is Time Really Money?

by Barbara Janowitz Family Health International

King and Benson find that switching from D&C to MVA reduced median costs per patient by 27 percent in one group of patients. They attribute much of the cost difference to shorter hospital stays for MVA patients. But a key assumption underlying their conclusion is that overhead resources are used in proportion to the length of time that the patient stays in the hospital. It is just as reasonable, however, to assume that a patient uses the same amount of these overhead resources no matter how long she stays in the hospital. For example, paperwork is completed for patients at the time of check-in and check-out, and bed linens are changed just once. Therefore, a shorter length of stay does not necessarily lead to proportionally lower costs.

Moreover, most of the cost savings have no financial impact because they are opportunity costs, in that staff time and other hospital resources are freed up to provide other services. If there are other productive uses for these resources, for example improving patient counseling, this is an important cost saving to hospitals. However, not all obstetrics and gynecology wards are fully utilized. Thus, shorter hospital stays may free up resources that go unused because of low patient demand.

Finally, hospital administrators may be most concerned with the financial implications of switching from D&C to MVA. They want to know more about what happens to expenditures for drugs and other supplies, which are under their control.

From a methodological perspective, in order to understand if time really is money, use of MVA presents an opportunity to substantially improve the quality of postabortion care while reducing costs of services.



Studies show that switching to MVA and reorganizing services can help improve quality of care in many ways, including reducing overcrowding common in many Ob Gyn wards.

health services. In addition, decentralizing health services from urban hospitals to health centers is becoming more common. The cost and efficacy of these fields of PAC have been little investigated, although Ipas is currently conducting studies that address these issues in Ghana, Zimbabwe, Mexico, and Peru. Overall, while many research and programmatic issues remain to be fully

Sources

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Tim King is Research Associate and Janie Benson is Director of Health Systems Research at Ipas, an international, nonprofit reproductive health organization that manufactures and sells MVA instruments.

Resources



Population Council Awarded USAID Cooperative Agreement

The Population Council has been awarded a five-year \$60 million cooperative agreement by the United States Agency for International Development to improve family planning and reproductive health services in sub-Saharan Africa, Asia, the Near East, Latin America, and the former Soviet Union. The new project, "Frontiers in Reproductive Health," uses OR to improve clients' access to care and enhance the quality and sustainability of reproductive health services. The Council's partners are Family Health International (FHI) and Tulane University School of Public Health.

Frontiers will use OR not only to foster the development of new reproductive health policies but also to demonstrate how these policies can be implemented at the community level. The program will develop innovative solutions to service delivery problems, communicate research results to policymakers and program managers, and improve managers' ability to solve problems by building OR capacity in local organizations. Frontiers will consolidate the Council's three regional OR/TA projects into a global program to study common problems in different contexts.

For further information please contact Frontiers at, 4301 Connecticut Ave, NW, Suite 280, Washington, DC 20008, Tel (202) 237-9400, Fax (202) 237-8410

Subscribe to the OR E-Mail Network, a worldwide listserv in population, family planning, and reproductive health.

The Operations Research E-Mail Network is an automated electronic mailing system that transmits e-mail messages from the Population Council in New York to over

500 subscribers in the United States, Africa, Asia and the Near East, and Latin America and the Caribbean. Subscribers to this listserv, used for OR information dissemination, include USAID/W, USAID Missions, program administrators, researchers, and policymakers.

If you would like to be added to the OR E-Mail Network, send an e-mail to ngouede@popcouncil.org with your name, organization, functional title, e-mail address, and a line stating you would like be added to the Network.

An Invitation to Participate in the DataPAC Project

Consensus is building among researchers and policy makers that materials from postabortion care studies should be compiled into a single database in order to facilitate comparative and other secondary analyses and to provide a resource for researchers designing new studies. Ipas, an international, nonprofit organization that addresses global reproductive health issues, is coordinating the development of DataPAC in collaboration with the Population Council, USAID, and other organizations. DataPAC will include an electronic database of PAC studies, supporting documentation (e.g., questionnaires, protocols, publications), and eventually core questionnaires for use in future PAC studies.

Interested colleagues are invited to participate in the DataPAC project. Only through inclusion of all PAC data and documentation will DataPAC become a comprehensive and useful resource. For further information on how to contribute to or use DataPAC, contact Tim King at Ipas, PO Box 999, Carrboro, NC 27510-0999, Tel (919) 967-7052 or (800) 334-8446, Fax (919) 929-0256, E-mail datapac@ipas.org. OR VISIT THE

DATA PAC WEBSITE @ DATAPAC IPAS.ORG

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**POSTABORTION CARE IN LATIN AMERICA:
A SUMMARY OF OPERATIONS RESEARCH
UNDER INOPAL III**

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NOTES:

The authors are all employed by Ipas, a subcontractor to the Population Council under the INOPAL III contract. Ipas has designed and implemented several of the studies described in this chapter. Ipas works globally to improve women's lives through a focus on reproductive health.

ABSTRACT

Results from operations research studies can inform policymakers and elicit change well beyond the site or sites where data were collected. While the full impact of the 17 studies conducted in Latin America reviewed here has yet to be manifested, the immediate effects of research on postabortion care services at each study site have been documented. In terms of changes in clinical practice, relatively modest interventions have resulted in 75-90 percent of eligible patients being treated with manual vacuum aspiration. Similar gains in infection prevention practices and pain management have not been reported—nevertheless, data indicate that targeted interventions designed from baseline findings have improved these components of clinical services as well. Studies in Mexico and Peru documented marked improvements in counseling to patients about hygiene, warning signs, resumption of activities, and contraceptive choices. Data from Guatemala, Mexico, Paraguay, and Peru have shown that it is indeed possible to integrate contraceptive counseling and emergency treatment of incomplete abortion. These studies also reported that substantial increases in the frequency of contraceptive acceptance were feasible. Finally, data from several cost and resource use studies showed that, in most settings, reorganizing services by moving treatment from the operating theater to a procedure room and reclassifying treatment of incomplete abortion as an outpatient procedure substantially reduced the costs of postabortion care services both to the facility and to the patient.

INTRODUCTION

Each year an estimated 585,000 women worldwide die from complications related to pregnancy and childbirth, most importantly unsafe abortion, hemorrhage, obstructed labor, sepsis, and hypertensive disorders (World Health Organization, 1996a) Ninety-nine percent of the women are from the Southern Hemisphere or developing countries Millions more suffer the short and long-term consequences of such complications, including infection, infertility, and chronic pain Unsafe abortion refers to the termination of pregnancy performed or treated by unskilled providers as well as the inadequate treatment of spontaneous abortion (World Health Organization, 1994) It contributes significantly to the morbidity and mortality of reproductive age women throughout the world Globally 13 to 14 percent of all pregnancy-related deaths, 75,000 to 80,000 women, are attributable to unsafe abortion while in some settings this figure rises to as high as 60 percent (AbouZahr, 1996, World Health Organization, 1994, Tinker and Koblinsky, 1993)

The pattern is the same throughout Latin America, where unsafe abortion accounts for 24 percent of all maternal deaths (World Health Organization, 1994) An estimated 800,000 women seek treatment for abortion complications each year at public hospitals throughout the region (Singh and Wulf, 1994) However, most mortality and morbidity figures underestimate the impact of unsafe abortion on women's health since they tend to exclude women suffering from complications related to spontaneous abortion and do not include women who do not present themselves to formal public health services and

Since the 1994 International Conference on Population and Development (ICPD), the postabortion care (PAC) model has been widely recognized as an acceptable strategy for improving services provided to patients with complications from spontaneous or unsafely induced abortion with the goals of breaking the cycle of repeat abortions and helping to reduce maternal morbidity and mortality Postabortion care incorporates three interrelated and essential services for all patients treated for abortion complications, including

- 1) emergency treatment services for complications of spontaneous or unsafely induced abortion,
- 2) postabortion contraceptive counseling and method provision, and,
- 3) links between emergency abortion treatment services and comprehensive reproductive-health care (Greenslade, et al , 1994)

Implementation of PAC services throughout Latin America has taken place at a steady pace since 1993 and numerous lessons have been learned from the varied experiences of patients, providers and policymakers Operations research (OR) projects sponsored by the United States Agency for International Development/INOPAL III contract, as well as several other funding agencies including the Bergstrom Foundation, European Union, and the World Bank, have evaluated PAC in terms of resource use and quality, availability, and accessibility of services These OR studies have been particularly useful in engaging health systems in a process to identify the strengths and challenges of providing quality PAC services Overall, OR studies have facilitated the development of PAC service

delivery models that can be modified according to the needs of providers and patients and replicated from setting to setting

In this chapter, we highlight the nine PAC OR studies conducted in Latin America funded under the INOPAL III. Non-INOPAL III studies are also reviewed where relevant to the following themes

- 1) clinical practices,
- 2) counseling provided to PAC patients, including the quality of the patient-provider interactions,
- 3) postabortion contraceptive counseling and method provision, and,
- 4) costs and resources used in the provision of PAC services

Clinical Practices refers to the protocols and procedures followed when treating incomplete abortion arising from spontaneous or unsafely-induced abortion, including the specific procedure used for uterine evacuation (generally sharp curettage (SC) versus manual vacuum aspiration (MVA)), infection prevention, and pain management. *Clinical practices* also addresses the organization of services, noting whether patients are treated on an inpatient or outpatient basis and whether the procedure is performed in an operating theater or a procedure room. The *Information versus Counseling* section examines whether providers identify the concerns of postabortion patients and appropriately inform them about their diagnosis, treatment, and proper care after leaving the facility. The section on *Postabortion Contraception* outlines the ways in which a patient's reproductive needs and intentions are addressed. Finally, we present a summary of findings regarding the *Costs and Sustainability* of providing emergency services for incomplete abortion. Most studies reviewed in this chapter address each of these four themes. This review generally is based on information from published and unpublished reports, although we contacted study investigators for supplemental information when feasible.

METHODS

In general, OR studies are intended to measure the effect of an intervention (Fisher, et al, 1991), although some studies reviewed here were cross-sectional assessments designed to gauge the feasibility (physical, economic, social, and/or political) of future PAC interventions (Friedman, et al, 1998b, Orellana, et al, 1996). Table 1 describes a selection of nine PAC OR studies funded under INOPAL III that have been completed in Latin America since 1993, although many other PAC OR studies have also been conducted (Diaz, et al, 1998, Langer, et al, 1997, Abernathy, et al, 1996, Orellana, et al, 1996, Rogers, 1995, Johnson, et al, 1993a, Johnson, et al, 1993b, Cuarto, 1993).

Table 1 Selected INOPAL III PAC OR studies in Latin America, by country

Country	Year(s)	Sites	n*	Description
Bolivia ^a	1998	12	64	Baseline assessment of current PAC services in 3 regions (4 cities) Measured availability, accessibility, and quality of care, with additional data on cost and resource use collected at four sites
Bolivia ^b	1997-98	4	64	Opinion survey of 64 policymakers', providers', and administrators' views of MVA, factors contributing to maternal mortality and morbidity, and feasibility of introducing MVA in Bolivia
Honduras ^c	1997	1	100	Assessment of current PAC services, patient perceptions, and contraceptive counseling
Mexico ^d	1995-97	1	36	Cost and resource-use study of MVA and SC in Oaxaca
Mexico ^e	1997-98	6	803	Static-group comparison study in Mexico City evaluated safety and effectiveness of clinical technique, IEC, pain control, cost and resource use, and postabortion family planning in six IMSS hospitals
Mexico ^f	1997	4	70	Baseline assessment of quality and costs of PAC services prior to the introduction of MVA Sites include four of the largest regional ISSSTE hospitals **
Peru ^g	1996	1	15	Focus groups (n=6) and key informant interviews (n=7) with patients, various providers, and administrative staff
Peru ^h	1996-98	1	34	Pre-post intervention cost and resource-use study of MVA and SC, including measures of patient out-of-pocket expenses and future sustainability of modified PAC protocols
Peru ^h	1996-98	1	204	Pre-post intervention study measuring quality of care, clinical competence, infection prevention, pain management, IEC, and contraceptive counseling

* n represents number of patients except where otherwise noted under "Description" ** INOPAL III-funded baseline OR of AVSC intervention project

^aFriedman, et al , 1998a, ^bFriedman, et al , 1998b, ^cMedina and Mendoza Gutierrez, 1998, ^dBrambila, et al , 1998a, ^eFuentes Velásquez , et al , 1998, ^fBrambila, et al , 1998b, ^gGarate, et al , 1997, ^hBenson, et al , 1998

Study designs were generally non- and quasi-experimental and all utilized non-randomized convenience samples of providers or patients (Benson, et al , 1998, Brambila, et al , 1998a, Diaz, et al , 1998, Fuentes Velasquez, et al , 1998, Langer, et al , 1997, Abernathy, et al , 1996, Rogers, 1995, Cuarto, 1993) It is unclear whether sample size and power calculations were considered in the study designs as few authors addressed these issues in their reports Two studies involved repeat assessments a study in three public hospitals in Bolivia which featured independent-samples repeat assessments at approximately six ,12 and 18 months post discharge, and the Mexico City-Instituto Mexicano de Seguro Social (IMSS) study, which featured a static-group comparison design and follow-up of patients at 1 week and 6 months post-procedure (Diaz, et al , 1998, Fuentes Velasquez, et al , 1998) A mixture of qualitative and quantitative methods were employed Data collection instruments used included structured and semi-structured questionnaires, logbook reviews, case record forms, and observation checklists, while results from focus group interviews of patients and facility staff were reported in one study in Peru (Garate, et al , 1997) Cost and resource use studies typically incorporated observations of patients from arrival to discharge (time-motion studies) and included only patients presenting with incomplete abortion, unaccompanied by other complications such as septicemia or uterine perforation

(Benson, et al , 1998, Brambila, et al , 1998, Brambila, et al 1998b, Friedman, et al , 1998a, Fuentes Velasquez, et al , 1998, Abernathy, et al , 1996, Rogers, 1995, Johnson, et al , 1993a, Johnson, et al , 1993b, Cuarto, 1993) Cost and resource use study methodologies have been thoroughly described elsewhere (Abernathy, et al , 1993, King, et al , 1998a)

Data analysis often consisted of simple and stratified means and frequencies with qualitative interpretations of clinical significance. A few studies reported T-tests and Chi-squares (Benson, et al , 1998, Friedman, et al , 1998a, Langer, et al , 1997), and at least one study report included regression analyses (Langer, et al , 1997). The interpretation of inferential statistics in these studies is difficult to gauge considering the lack of reported sample-size or power calculations. A comprehensive review of PAC OR methodology is beyond the scope of this chapter, but several resources exist that provide a more complete treatment of the subject (King, et al , 1998b, World Health Organization, 1996b, Fisher, et al , 1991)

To ensure protection of human subjects, all INOPAL III study protocols were reviewed by the Population Council's Ethics Review Committee and many protocols were further reviewed by medical committees at each study site. As the reports reviewed here generally do not discuss protocol review procedures, it is unknown whether every study in Table 1 underwent a formal review process to address ethical issues. Anecdotally, most if not all researchers relied on verbal informed consent when recruiting patients and providers into the studies.

As with any research, each of the studies described here had strengths and weaknesses in design, implementation, and analysis. A review of the reports shows that some common traits exist across all PAC OR in Latin America to date. Perhaps the greatest strength of these OR projects is the breadth and depth of the issues they address. Each major substantive area of PAC OR -- clinical practices, IEC, contraceptive counseling, and costs and resource use -- was examined in multiple settings and countries. From a methodological viewpoint, most studies employed a pre-post intervention design, arguably a better design than static-group comparison for evaluating the impact of an intervention (Fisher, et al , 1991). However, some methodological weaknesses were exhibited throughout several studies. Few reports addressed sample-size or power calculations to help validate inferential statistics when they were used. Additionally, few studies attempted to collect any information about patients who refused to or could not participate in the study, thereby presenting a potential source of bias.

RESULTS AND DISCUSSION

Postabortion care OR studies in Latin America, both INOPAL III and other studies, have consistently reported similar results across the four areas highlighted for discussion in this paper. We will discuss study results with respect to these four categories.

Most studies included a PAC intervention component. The key elements of a PAC intervention typically included some or all of the following: 1) consensus-building among policymakers, administrators, and providers, 2) reorganization of services, 3) in-service

PAC training for providers, and, 4) workshops for administrators and service staff to orient them to new PAC services. Reorganization of services refers to moving treatment for patients with uncomplicated incomplete abortions from the operating theater to a procedure room and reclassifying PAC as an outpatient service. In-service training generally included use of MVA, infection prevention, pain management, discussing patient-provider interactions, and postabortion contraceptive counseling and method provision.

Clinical Practices

Most PAC OR studies, particularly when an intervention is involved, have a component documenting changes in clinical practices. Clinical practices refer to the implementation of protocols followed by facility staff when treating patients presenting with incomplete abortion. The major component of clinical practices is the specific technique used: SC or MVA (and in one study, electric vacuum aspiration (EVA)) (Rogers, 1995). Treatment protocols should also address infection prevention, pain control, and organization of facility services.

Treatment Technique

A number of studies have documented that MVA is safer than and as effective as SC when used for treating incomplete abortion at 12 weeks or less uterine size (Baird, et al, 1995). Consequently, a goal of many of the OR studies in Latin America was to demonstrate ways in which MVA could be introduced into a health care facility or system to replace SC for the emergency treatment of incomplete abortion.

Overall, the pre-post intervention studies demonstrated that, in most settings, MVA can be successfully incorporated into PAC services with the support of clinical and administrative staff. In both Oaxaca, Mexico and Peru, SC was used in 100 percent of cases before the PAC intervention, while in the post-intervention phase, 78 percent and over 90 percent of appropriate cases were treated with MVA in Oaxaca and Peru, respectively (Benson, et al, 1998, Langer, et al, 1997). In the Peru study, introduction of MVA was an integral component of the reorganization of services, where treatment for incomplete abortion procedure was moved from the operating theater to a PAC procedure room located in the obstetrics-gynecology emergency room. A growing body of evidence suggests reorganization of services is a critical component in improving emergency treatment for incomplete abortion (Benson, et al, 1998, Diaz, et al, 1998, Johnson, et al, 1993b).

Researchers have not routinely evaluated procedure-related complications, but the studies that have reported these data tend to show that frequency of procedure-related complications for MVA was the same or lower when compared to SC, usually less than one percent (Fuentes Velásquez, et al, 1998, Langer, et al, 1997, Abernathy, et al, 1996). However, estimates of procedural complications should be interpreted cautiously as in emergency settings it is often difficult to distinguish between injuries and infections arising from the original induced or spontaneous abortion from those arising from the uterine evacuation procedure.

In most public health facilities and systems in Latin America, SC with general anesthesia or heavy sedation is the standard protocol used for uterine evacuation as it is taught in most medical schools and used in most teaching hospitals. Although numerous studies have documented the advantages of reorganizing services and using MVA instead SC for eligible patients, considerable barriers exist to the introduction of the PAC model with MVA for the emergency treatment of incomplete abortion. Many providers perceived SC to be an efficient and safe technique for treatment of incomplete abortion and therefore were resistant to adopting a new technology. Moreover, some researchers have reported that providers preferred to treat patients with SC under general anesthesia because the patients were unconscious, thus saving the provider from having to interact with the patient at all during the procedure. However, many providers and policymakers have used the results of PAC OR to overcome these barriers and have accepted the PAC model using MVA. For example, a semi-structured interview of providers, hospital administrators, and policy-makers in Bolivia reported that 89 percent supported pilot-testing PAC with MVA (Friedman, et al , 1998b). In Latin America, the data show that the PAC model can be successfully introduced, but only when political, institutional, and social support are present.

Infection Prevention

In addition to changing the treatment technique for uterine evacuation, evaluating related practices such as infection prevention and pain management protocols was an important feature of several studies (Benson, et al , 1998, Friedman, et al , 1998a, Fuentes Velásquez, et al , 1998, Medina and Mendoza Gutierrez, 1998, Langer, et al , 1997). Infection prevention includes use of universal precautions such as hand-washing, use of gloves, decontamination and high-level disinfection or sterilization of medical instruments, and appropriate disposal of biohazardous waste.

Appropriate infection prevention protocols are well established (Tietjen, et al , 1992), yet studies universally report that infection prevention practices are inadequate. Only the Peru project reported directly observing infection control practices and, while practices improved somewhat after the intervention, this area remained problematic (Benson, et al , 1998). Anecdotal reports from other studies suggest that infection prevention practices consistently did not adhere to internationally accepted protocols.

Pain Management

Several studies examined patients' perceptions of physical pain and pain management throughout the PAC process (Benson, et al , 1998, Friedman, et al , 1998a, Fuentes Velásquez, et al , 1998, Medina and Mendoza Gutierrez, 1998, Langer, et al , 1997, Garate, et al , 1997). It is important to note that pain measurement is very subjective and thus comparisons across studies in which patient populations are quite different must be made carefully. Most studies in this review focused on measuring the intensity of pain felt by patients throughout their care by asking them to rate pain using an 11-point scale, where zero represented "no pain" and ten represented the "worst pain ever experienced" or the "worst pain imaginable". The Mexico City-IMSS study expanded evaluation of pain to include patients' descriptions of the location and type of pain they felt as well as their emotional state throughout the process of care (Fuentes Velásquez, et al , 1998). In

all cases, data on patients' perceptions of pain were collected during an interview conducted prior to discharge from the hospital such that patients were asked to recall the pain experienced at different stages during their stay in the hospital

Overall, patients reported decreases in pain intensity from the time of entry to the time of discharge from the facility. Interestingly, in the Mexico-IMSS study patients treated with MVA reported a more rapid decline in pain intensity than did patients treated with SC, presumably due to differences in being treated with suction versus a sharp curette. In the IMSS hospitals, patients treated with MVA were given paracervical blocks. In contrast to the Mexico City-IMSS study, patients treated with SC and MVA in Peru reported equally low levels of post-procedure pain. In Peru, potential differences between the two techniques may have been masked by extensive use of heavy sedation for MVA patients.

Pain management protocols refer not only to those used during the procedure but also to those employed in the pre- and post-procedure periods. Pain should be managed according to generalized protocols that are applied to each patient according to her specific needs. In general, use of light sedation and supportive interaction with the provider poses fewer health risks to the woman, while adequately managing her pain, than does the use of heavy sedation or general anesthesia. As noted in Margolis et al (1993), "the objective of pain management is to ensure that the woman suffers the minimum of anxiety and discomfort as well as the least risk to her health." Achieving this balance is the challenge of every health care provider.

Data on pain management in the reviewed studies were gathered through observation and review of case record forms. Studies typically reported pain medications in classes (general or local anesthesia, light or heavy sedation, analgesia) rather than the actual medications, doses, and routes provided. Pain management practices tended to be uniformly inadequate during the pre- and post-procedure periods, where providers rarely asked patients about their pain and rarely or never provided pain medications. In the Mexico City-IMSS and Peru studies, 60 and 88 percent of patients reported feeling pain as they waited to enter the procedure room, respectively, yet none received analgesia to relieve their discomfort (Benson, et al, 1998, Fuentes Velasquez, et al, 1998). This may be related to several factors, including patients' reluctance to verbally express their pain and providers' traditional focus on controlling pain during the uterine evacuation procedure with little to no attention paid to the pain patients may experience before or after the procedure. One exception was reported in the Oaxaca, Mexico study where, even during the pre-intervention stage, 93 percent of patients waiting for the procedure were asked whether they were in pain and 26 percent received analgesia (Langer, et al, 1997).

Although providers in Peru reported that pain management was inadequate, particularly while patients were waiting to be treated (Garate, et al, 1997), patients in the Peru study reported decreasing levels of pain intensity between the waiting room and the recovery area (Benson, et al, 1998). These pain estimates were similar to those reported in the Mexico City-IMSS study, although the patients in the IMSS study appeared to report



higher levels of pain at the time of the patient exit interview relative to the patients in the Peru data (Table 2) (Fuentes Velasquez, et al , 1998)

Table 2 Mean intensity of pain reported by patients Peru and Mexico City-IMSS*

Variable	Peru		Mexico-IMSS		
	SC (n=102)	MVA (n=102)	SC Standard (n=282)	SC PAC (n=270)	MVA PAC (n=251)
Pre-procedure	5.8	4.2	6.5	6.4	6.1
Post-procedure	1.0**	1.4**	5.0	5.0	3.7

*Pain intensity reported on a Likert-type scale from 0 (no pain) to 10 (worst pain)

**p< 05 when comparing the reporting of pain intensity pre- versus post-procedure

Also, in the Peru study, patient reports of pain intensity during the pre-procedure waiting period were significantly lower, 5.8 and 4.2 for pre- and post-intervention, respectively (p< 05). Providers theorized that reduced waiting times before the procedure (5.2 hours and 2.9 hours for the pre- and post-intervention, respectively) and proportionally more contact time with staff may have influenced the patients' recall of pain intensity at the exit interview.

As expected, MVA patients who received light sedation and/or local anesthesia reported procedural pain versus SC patients who were heavily sedated or unconscious during the procedure and therefore were less likely to report procedural pain (Medina and Mendoza Gutierrez, 1998, Benson, et al , 1998). The moderate levels of pain intensity reported by patients treated with MVA in Peru and Honduras support greater efforts to ensure that patients experience minimal pain while avoiding increased risks of complications associated with heavy sedation and general anesthesia.

As noted earlier, most of the INOPAL OR studies involved an intervention component that included introducing MVA as an alternative to SC for eligible patients. Providers, in general, were already trained and familiar with using SC under general anesthesia or heavy sedation while few had in-depth experience utilizing MVA in combination with local anesthesia, light sedation, and/or supportive counseling during the procedure. In the Honduras study, 43 percent of patients were put under general anesthesia or sedated to the point of unconsciousness during the procedure even though an unreported proportion of these patients were treated with MVA and most likely did not require this pain control regimen (Medina and Mendoza Gutierrez, 1998). Similarly, in Peru, even after an intervention that included a component on pain management in addition to MVA training, 75 percent of MVA patients continued to be heavily sedated (Benson, et al , 1998). Perhaps the most substantial improvements in pain management during the uterine evacuation procedure were reported in the Mexico-Oaxaca study, where the frequency of general anesthesia fell from 91 to 30 percent, while use of paracervical blocks rose from one to 59 percent when comparing pre- and post-intervention data (Langer, et al , 1997).

Modifying pain management practices to move away from general anesthesia or heavy sedation to light sedation and analgesia requires that physicians, nurses, and anesthesiologists take on new support roles during the procedure if pain is to be managed adequately. Patients' varying reports of pain during the MVA procedure indicate that

providers should continue to strengthen their skills in identifying with the needs of the patient, offering feedback that relaxes the patient, and providing a combination of local anesthesia, analgesics and/or anxiolytics that will effectively manage patient's pain

Information versus Counseling

Two integral components for ensuring quality of PAC services are 1) patient information and counseling, and, 2) interaction between health care providers and patients (Greenslade, et al , 1998) Both must be approached in ways that orient patients to their health status, make them feel respected and supported, and provide them with the opportunity to have their questions adequately addressed If patients leave the health facility with fewer doubts about their health, a sense that the providers are there to help rather than chastise, and skills in how to care for themselves after the abortion experience, then they will be more likely to return for follow-up services

However, providers in general have not emphasized the need to identify with the expectations and concerns of PAC patients nor have they focused on high quality counseling, rather than information provision, as important to the overall services offered to patients "Counseling" is defined as a process of interaction between the provider and patient through which the patient is able to understand her condition and to make decisions according to her needs and expectations This differs from information provision whereby such needs and expectations may not be taken into account as the provider directs a pre-structured message to the patient Counseling for PAC patients should include information on patient's health status, clinical procedure, possible post-procedural complications, recommendations regarding hygiene, and return to routine activities

Patients arriving at health facilities with abortion complications traditionally have been chastised, stigmatized, and relegated as less important than other patients (Diaz, et al , 1998, Garate, et al , 1997, Rance, 1993) Although patients perceived as having had an induced abortion have been singled-out for harassment, such as being charged more for services, anecdotal reports suggested that patients presenting with spontaneous abortions often fared no better Introducing counseling into a model of PAC services, therefore, is groundbreaking for many providers and health care systems and presents challenges to those unaccustomed to incorporating the actions and demeanor necessary to provide patients with comprehensive care

In two of the studies reviewed in this chapter (Mexico-Oaxaca and Peru), training interventions were implemented in order to improve counseling (Benson, et al , 1998, Langer, et al , 1997) In the third study (Mexico City-IMSS), existing models of care that incorporated counseling were compared to the standard model of care that simply presents patients with information (Fuentes Velasquez, et al , 1998)

Results from the studies reviewed in this chapter vary somewhat in terms of the impact of the intervention introduced In Mexico-Oaxaca, the training of hospital staff, in particular nurses and social workers, had a strong positive effect on the interpersonal communication processes between medical staff and the postabortion patients For

example, the percentage of patients receiving information about their health status before entering the procedure room increased from 68 to 87 percent ($p < 0.05$) as did the percentage of patients who knew the name of the doctor performing the procedure (pre 17%, post 74%, $p < 0.05$) While virtually no patients received information about post-procedural recovery, potential problems, and where to seek care in case of problems during the baseline phase, one-half of all patients were told about possible complications and where to go after the intervention (Langer, et al , 1997) Providers themselves noted a change in their own attitudes after participating in workshops focused on interpersonal relations As one noted, "We can do it if we set our minds to it because our excuse has always been the lack of time It is possible to chat with the patient and give her information in only a couple of minutes, while we are getting ready to perform a procedure" (Langer, et al , 1997)

In addition to observing patient counseling, the Peru study also asked patients to recall counseling they received (Benson, et al , 1998) Results were somewhat mixed in the post-intervention phase as a significantly greater percentage of patients recalled receiving information about when to return to her daily activities and when their menstrual period would return after the intervention ($p < 0.05$) Fewer patients, however, recalled being told of the need for personal hygiene, signs of possible post-procedural complications, and the need to delay sexual intercourse Supervisors of the new postabortion services attributed the deficits to the staff's perception that the ambulatory patients assessed in the post-intervention phase needed less comprehensive information than did patients in the pre-intervention phase who were hospitalized and seen as more "ill" (Benson, et al , 1998) Some results from the PAC study in Honduras were promising in that, before any PAC intervention, 80 percent of patients were told about their return to fertility, when their menstrual period would return, and when to resume normal life activities Almost no patients in the Honduras study, however, were able to identify the signs and symptoms of possible post-procedural complications (Medina and Mendoza Gutierrez, 1998)

In the Mexico City-IMSS project, patients treated in models where counseling was a standard part of services (MVA PAC, SC PAC) reported greater confidence in hospital staff, perceived that staff identified their concerns, and felt that staff helped them to address their concerns, than did patients treated in the SC Standard model of care where only minimal information was provided Patients treated with PAC models also received more information about their health status than did patients treated in the SC Standard model of care A significantly higher proportion of patients treated with MVA received information about the uterine evacuation procedure than did those treated with SC (53 % were sufficiently informed vs 10% and 3%, $p < 0.05$) Disappointing was the overall low proportion of patients (2%- 41% across all three models) who received information about possible post-procedural complications and return to normal life activities Despite the low figures, the PAC models that included counseling generally showed better results than did the SC Standard model that did not include counseling as part of the standard package of services

Overall, high-quality counseling to patients treated for abortion complications presents challenges for service providers unaccustomed to identifying with patients' concerns and

needs and providing them with information to help avoid future health problems. Postabortion care training workshops and follow-up supervision should continue to stress counseling so that providers can understand its importance, recognize that it does not require a great deal of additional time with a patient, and become more proficient in providing adequate counseling throughout the postabortion care process.

Postabortion Contraception

Postabortion contraceptive counseling is one of the three central components of the PAC model of services that should be delivered to all patients arriving at health facilities with abortion complications (Greenslade, et al , 1994). Patients should be given adequate counseling about methods that meet their needs and expectations so that they make a fully informed choice about accepting or continuing contraceptive use. Patients presenting with complications from spontaneous abortions may also desire a way to delay future pregnancies. Regardless of the cause of the abortion, patients should not return to their homes without a thorough understanding of the rapid return to fertility and the benefits, risks, and secondary effects of a range of contraceptive methods. As data show that patients often do not return for referral appointments, both new and current contraceptive users should receive a method before leaving the area where they were treated for incomplete abortion (Solo, et al , 1998).

In Peru, *obstetrices* provided contraceptive counseling. *Obstetrices*, also called *matronas* in some Latin American countries, are university-trained midwives who complete a five-year theoretical and practical training program and provide the bulk of reproductive health services in some countries. In Mexico and Honduras, physicians actually treating the woman for incomplete abortion and social workers were the main cadre of providers offering contraceptive services, including counseling. Overall, health care providers who included contraceptive counseling in the repertoire of services offered to patients found that additional time was not added either to their interactions with patients or to the length of the patient's stay in the hospital. Instead, they used their time with the patient more efficiently to offer an important service (Benson, et al , 1998, Brambila, et al , 1998a, Fuentes Velasquez, et al , 1998).

Facilities in Bolivia, Honduras, Mexico (excluding IMSS facilities), and Peru generally did not include contraceptive counseling and method provision as part of the standard services offered to patients after their treatment for incomplete abortion (Benson, et al , 1998, Diaz, et al , 1998, Medina and Mendoza Gutierrez, 1998, Langer, et al , 1997). In fact, it is common throughout the world that emergency treatment services are not linked to contraceptive services such that patients often leave the health facility without information and a contraceptive method to help them avoid or delay future pregnancies if they so desire. Reasons can include the physical and administrative separation between the ward or area where emergency treatment services are provided and on-site family planning clinics, limited accessibility to contraceptive methods for staff not working in the family planning clinic, minimal staff knowledge about postabortion contraception, and in general the lower priority given to postabortion patients.

When emergency treatment services were linked explicitly to postabortion contraceptive counseling and method provision, a significantly greater proportion of patients were presented with a range of methods, received information about them, and actually received a contraceptive method before leaving the hospital (Table 3) Note that the SC PAC model was left out of the table so that the Mexico City-IMSS study could be compared directly with the other studies in which pre-intervention is similar to SC Standard services and post-intervention is similar to MVA PAC services The SC PAC model found that 77 percent of patients received a contraceptive method prior to their discharge from the hospital, a figure comparable to the MVA PAC model of 63 percent (p=n s) This finding suggests that incorporating contraceptive counseling into PAC services is more important than the clinical technique used for uterine evacuation when evaluating contraceptive acceptance (Fuentes Velasquez, et al , 1998)

Table 3 Percentage of postabortion patients receiving a contraceptive method before discharge from the facility Data from four studies*

Location of Study	Pre-Intervention % (n)	Post-Intervention % (n)
Honduras	N/A	58 0 (100)
Oaxaca, Mexico	29 5 (136)	59 7** (207)
Peru	2 0 (102)	58 8** (102)
	SC Standard	MVA PAC
Mexico City-IMSS	36 5 (282)	63 3** (251)

*Pre- and post-intervention in Peru and Oaxaca, Mexico, MVA PAC model and SC Standard model in Mexico City, Post-intervention data only available from Honduras study

** p < 0 05

The Mexico City-IMSS project was unique in that it included a component that examined the prevalence of contraceptive use over time Patients treated for incomplete abortion were asked to return to the hospital at 7-days post-discharge for a follow-up exam and interview Patients who agreed to participate but did not return to the hospital were interviewed by phone or in person in their homes, after providing informed consent to the interviewer Patients completing the 7-day follow-up interview were then asked to participate in a 6-month follow-up interview conducted in their homes or by phone (Fuentes Velasquez, et al , 1998) It should be noted that following patients over time is difficult and, similar to other PAC OR follow-up studies (Johnson, et al 1998), the Mexico City-IMSS study reported high loss-to-follow-up rates High loss-to-follow-up may introduce bias into contraceptive continuation rates, as researchers have no means to determine whether patients who drop out of a study continue to use a method or not

Both the frequency of acceptance and continuation of all methods were significantly higher in models where counseling was included as part of the standard services offered to patients (Table 4) A greater proportion of patients received a method when treated in models where counseling was part of the standard services (MVA PAC 63%, SC PAC

77%, SC Standard 33%) Of those who received a method at discharge, a high proportion continued to use the method at 7-days (89-92%) At 6 months, however, a higher percentage of patients treated in the MVA PAC model were still using their method relative to those treated in the SC PAC and SC Standard models Overall, the MVA PAC model was the most effective model in terms of contraceptive continuation rates

Table 4 Prevalence of any contraceptive use over time among patients accepting contraception before discharge Mexico City-IMSS study

Time of Interview	MVA PAC (n=61)* %	SC PAC (n=95)* %	SC standard (n=37)* %
7 days	91.8	87.4	89.2
6 months	83.6	66.3	56.8

*Sample sizes (n) equaled number of patients accepting any method of the total sample of those completing all three interviews discharge, 7-days, 6-months

While the Mexico City-IMSS study followed patients through six months post-discharge to assess contraception continuation rates, a study in three public hospitals in Bolivia repeated measures at approximately 12 and 18 months to assess whether increases in contraceptive acceptance rates were sustainable By integrating contraceptive counseling into emergency treatment services, contraceptive acceptance rose from 0-10 percent in the three hospitals to approximately 20-70 percent and remained stable more than one-year later (Diaz, et al , 1998)

One problem with the standard method for calculating the frequency of contraceptive acceptance is that the method does not account for the actual number of women who desire a method For example, if a hypothetical 100 patients were treated for incomplete abortion and 60 accepted a contraceptive method, then contraceptive acceptance traditionally would be calculated as 60/100, or 60% However, let us assume that a number of the 40 non-acceptors either already were using another method (5 patients) or desired to become pregnant again in the near future (15 patients) This leaves a total of 80 patients as potential contraceptive acceptors A more meaningful estimate of the effectiveness of postabortion contraceptive services would then be the number of acceptors divided by the total number of patients desiring contraception In our hypothetical example, the proportion of patients desiring contraception who received a method would be 60/80, or 75%, as opposed to the 60% estimate of contraceptive acceptance when calculated in the standard practice In effect, not accounting for current contraceptive use or a desire for an immediate pregnancy when evaluating contraceptive acceptance has resulted in an underestimate of the effectiveness of postabortion contraceptive method provision

Overall, each of the studies reviewed in this chapter found that systematically linking contraceptive services with the emergency treatment of incomplete abortion was vital to ensuring that patients left the hospital with information about how to prevent or delay another pregnancy Reports also suggest that PAC training must emphasize that method provision should always take place in accordance with the needs and consent of each

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patient When such services were offered, more patients left the hospital with a contraceptive method and continued to use the method over time Nevertheless, integration of contraceptive services into emergency care treatment was challenging in Honduras and Oaxaca, Mexico as staff responsibilities for contraception services outside the outpatient clinic were not well-defined and contraceptive commodities were not usually kept in the same area where emergency services were offered (Medina and Mendoza Gutierrez, 1998, Langer, et al , 1997) An exception to this was in Peru, where the intervention included moving contraceptives to the obstetric emergency room (Benson, et al , 1998)

Costs and Sustainability

Costs and Average Length of Stay

Nine studies, four of which were sponsored by INOPAL III, are reviewed that included a component to estimate the total average cost to the facility of treating PAC patients in Bolivia, Mexico, and Peru (Benson, et al , 1998, Brambila, et al , 1998, Friedman, et al , 1998, Fuentes Velasquez, et al , 1998) Unfortunately, results from the Bolivia cost study were not available at the time of the writing of this chapter Results from these studies showed that switching to MVA while concurrently reorganizing services tends to reduce patients' average length of stay (ALOS) and treatment costs to the facility substantially (Table 5) (King, et al , 1998c)

Table 5 Weighted means of ALOS and facility costs based on data from Brazil, Ecuador, Mexico, and Peru MVA versus SC*

Variable	SC [range] (n)	MVA [range] (n)	Difference (% decrease)
ALOS (hours)	25.0 [9.2-38.3] (123)	14.9 [1.7-26.8] (77)	10.1 hours (-40.4%)
Costs (\$US)	118.27 [3.06-264.27] (123)	60.19 [3.66-132.89] (85)	\$58.08 (-49.1%)

*Based on data from studies reporting ALOS, costs, and sample sizes (Rogers, 1995, Johnson, et al , 1993a, Brambila, et al , 1998a, Johnson, et al , 1993b, Cuarto, 1993, Benson, et al , 1998)

Weighted means were calculated in order to give more weight to studies with larger sample sizes However, the means, weighted means, and medians typically varied by 10% or less for most measures of cost and ALOS (data not shown) Overall, based on data from both INOPAL III and non-INOPAL III cost studies in Latin America, introducing MVA as part of a reorganizing services reduced ALOS and facility costs by approximately 40-50 percent each However, reporting means obscures important anomalies in the data While the majority of studies reported marked decreases in ALOS and costs when MVA was used to treat incomplete abortion (Benson, et al , 1998, Brambila, et al , 1998a, Abernathy, et al , 1996, Rogers, 1995, Johnson, et al , 1993b, Cuarto, 1993), not all data agreed (Fuentes Velasquez, et al , 1998, Johnson, et al , 1993a) A 1993 study in Ecuador showed that facilities that switched to MVA while continuing to treat PAC patients under general anesthesia in an operating theater actually had similar ALOS and costs than facilities that continued using SC under the same conditions (Johnson, et al , 1993a) Alternately, the Mexico-IMSS found that, when SC is

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performed on an outpatient basis, switching to outpatient MVA generates no additional savings over SC (Fuentes Velasquez, et al , 1998)

These data show that reorganization of services rather than changing the clinical technique alone is the key for reducing patient stays and costs to the facility. Improving the quality of PAC services requires much more than new technologies but also comprehensive training, management support, and improved service delivery organization. However, anecdotal reports suggest that many providers and administrators believe that adopting MVA facilitates concurrent changes such as making treatment of incomplete abortion an outpatient service. Only two studies reported attempts to make SC an outpatient service or to integrate contraceptive counseling with SC treatment services (Diaz, et al , 1998, Fuentes Velasquez, et al , 1998)

The cost study in Oaxaca, Mexico also estimated the cost of the intervention itself, where training and increasing resources for patient counseling cost an average of \$44.43 per patient, or nearly 25% of the total average cost of treating a PAC patient (\$180.22) (Brambila, et al , 1998). The cost of improving PAC services is an important piece of information for administrators, and future cost studies would benefit from also estimating intervention expenses. However, when comparing cost from the pre- and post-intervention phases of a study, the cost of the intervention should not be included in the estimates of the average total costs after the intervention. As it is likely impossible to accurately estimate the cost of the original incomplete abortion training providers received in medical school, including training and other related costs of a PAC intervention results in an underestimate of the financial benefit of reorganizing services. Hence, the interventions costs reported by Brambila et al (1998) were excluded in the cost comparisons in Table 5 above.

One of the shortcomings of many PAC cost studies has been a narrow focus on costs to the facility. Certainly facility costs are a key component of sustainable services, but patient fees and other out-of-pocket expenses play an important role in whether patients seek professional PAC services when needed. As reorganizing services can substantially reduce costs to the facilities, in some cases administrators have passed these savings on to the patients by reducing fees. For example, in Paraguay, MVA patients were estimated to have 75 percent lower out-of-pocket expenses than their SC counterparts (Abernathy, et al , 1996). In the Peru study, when the director of the emergency room was presented with data showing that SC patients cost an average of US\$ 119 to treat compared with \$45 for MVA patients, she cut patient fees in half for ambulatory patients (from approximately US\$32 to \$16) (Benson, et al , 1998). Logbook data from the Peru hospital showed that these improvements have been sustained. In the six months after the study was completed, MVA use for appropriate cases remained over 90 percent and patient fees continued to be lower than before the intervention was implemented.

Lowering costs is an important component to making PAC services sustainable both in individual facilities and throughout health systems. However, sustainability often requires much more than financial resources. A framework for creating stable PAC programs describes four components for sustainability: 1) policy development, 2) resource

allocation, 3) health system infrastructure, and, 4) technical competence (Potts, et al , 1997) Most researchers include only discussions of points 2-4 in their final reports and presentations However, policy development is the first step in building sustainable PAC programs and thus most PAC OR projects included a policy development component (Benson, et al, 1998, Abernathy, et al, 1996) Two studies in Bolivia serve as examples for the use of PAC OR as a means of furthering policy development in the area of unsafe abortion (Friedman, et al , 1998a, Friedman, et al , 1998b) An opinion survey of providers, administrators, and national-level health authorities was requested by the Bolivian Ministry of Health (MOH) as a tool in their efforts to improve PAC services Data established that, despite a conservative environment, demand existed for improved services for the treatment of incomplete abortion, with 89 percent of interviewees supporting a pilot-test of PAC with MVA (Friedman, et al , 1998b) At the behest of the MOH, a baseline study was conducted at 12 facilities to document the existing availability, accessibility, cost and quality of incomplete abortion services in order to evaluate the need for a PAC intervention Overall, results generally suggested that existing services were poor and underutilized (Friedman, et al , 1998a) An indirect outcome of these two studies has been an increased willingness on the part of health authorities to discuss the problem of morbidity and mortality related to abortion, bringing PAC to higher levels of visibility than had been previously permissible

IMPACT

Results from OR studies can inform policymakers and elicit change well beyond the site or sites where data were collected or interventions introduced While the full impact of the research described here has yet to be manifested, immediate effects of OR on PAC services at the study sites have been documented by each study discussed in this chapter In terms of changes in clinical practice, relatively modest interventions have resulted in 75-90 percent of appropriate cases being treated with a safer technique, MVA Similarly impressive gains in infection prevention and pain management have not been documented Nevertheless, data indicated that targeted interventions designed from baseline findings have helped improve these components of clinical services Studies in Mexico and Peru documented marked improvements in counseling about hygiene, warning signs, and resumption of activities, as well as contraceptive counseling Data from Bolivia, Guatemala, Mexico, Paraguay, and Peru show that it is indeed possible to integrate contraceptive counseling and emergency treatment of incomplete abortion These studies also reported that substantially increasing contraceptive acceptance is feasible Finally, data from several cost and resource use studies showed that, in most settings, reorganizing services and adopting MVA substantially reduced the costs of PAC services both to the facility and to the patient It is important to note that PAC OR data from Latin America have been corroborated by studies in other regions In January 1998 meeting in New York City brought together PAC researchers from Africa, Asia, and Latin America A commonality of experience was evident -- PAC services were generally poor at most facilities but could be improved with tailored interventions

While Latin American research and projects from other regions share many similarities, INOPAL III projects nevertheless have advanced the development of PAC OR methodology For example, the Peru study was among the most sophisticated studies to

date in Latin America investigating the advantages and disadvantages of integrating contraceptive counseling with outpatient, emergency treatment of incomplete abortion. The study showed that integrating services results in better contraceptive counseling and method provision, shorter stays, and much lower costs. The study in IMSS hospitals in Mexico City was the most comprehensive review of patient perceptions of pain and pain management protocols, reporting that patients treated with MVA “experienced a more rapid and profound decrease in their perception of pain.” The IMSS study was also the first detailed evaluation of incorporating the PAC model into SC services and was the only study in Latin America to follow patients over time. Although nearly 30 studies have used the Ipas methodology to estimate costs associated with the provision of PAC services (King, et al, 1998c), the cost and resource use study in Oaxaca, Mexico introduced an “efficiency ratio” into the analysis, designed to gauge the efficiency of provider interactions with patients. Also, the study in Oaxaca was the only INOPAL III study estimate costs associated with the intervention itself.

While most INOPAL III studies have only recently completed the data collection and analysis phase, some PAC OR studies have already had impacts at regional and national levels. In Paraguay, a small quality of care and cost study was the basis for implementing a national PAC program (Abernathy, et al, 1996). After several years of negotiations, two INOPAL III research projects in Bolivia are guiding the Ministry of Health towards improving PAC services in public health facilities. The possibility of using the PAC model to reduce resource use and facility cost associated with emergency treatment of incomplete abortion has contributed to the Bolivian government’s willingness to introduce coverage into its national basic health insurance plan for treatment of complications of “hemorrhage during the first half of pregnancy.” Overall, PAC OR studies in aggregate have helped to transform perceptions about abortion-related issues and fostered an openness in addressing the issues of abortion and maternal morbidity and mortality (Benson, 1998).

Future Directions

While INOPAL III research projects have helped to answer many questions about PAC programs, many issues remain virtually unexplored. Some issues for future research might include the following:

- The long-term sustainability of improvements derived from PAC programs within the health facilities and systems
- Integrating the third component of PAC, linkages of other reproductive health services with emergency treatment services
- Integrating the PAC model into SC services when adopting MVA is not feasible
- Continuation of postabortion contraception over time according to the reproductive intentions of the patient
- Decentralization of PAC services to facilities that have not been previously evaluated by PAC OR studies, including primary and secondary-level health facilities and private facilities
- Specialized populations such as adolescents, patients with sexually transmitted infections, and rural populations

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- Men as partners, providers and policymakers
- Scaling-up of PAC programs from the facility level to the system or national level
- How to address ethical issues in PAC OR

Finally, disseminating results of PAC OR in Latin America to key audiences is critical in order for the results to lead to informed policy and programmatic decisions. Dissemination should always begin with presentations to the staff at the study facility or facilities before going on to wider audiences. However, PAC OR results can have benefits well beyond the national or even regional level, and thus researchers should attempt to present findings in journal articles, conferences, and other venues with a regional or international audience. Also, results from studies are increasingly being "published" electronically via "listservs" and the World Wide Web. Websites that may be interested in posting a brief summary of the findings include Ipas's website dedicated to PAC OR projects (<http://datapac.ipas.org>) and the Population Council's OR/Technical Assistance site (<http://www.popcouncil.org>), and the list is growing daily. Patients, providers, and policymakers throughout the world should benefit from impressive accomplishments of PAC OR in Latin America.

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