

Profiling Midwifery Services in the Americas

Models of Childbirth Care

Prepared by:

Dr. Karen Odberg Pettersson, RNM, MNsc, MPH, PhD
Kari Stone, BSN, MPH

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TABLE OF CONTENTS

PROLOGUE	V
EXECUTIVE SUMMARY	1
INTRODUCTION	3
GENERAL BACKGROUND	5
1. Midwifery.....	5
2. Skilled Attendance	6
3. The Maternal Health Situation in the Americas.....	6
PROBLEM STATEMENT	9
AIM	11
METHODOLOGY	13
RESULTS	15
1. Summary of Literature Search	15
2. Terminology Applied for Midwifery Maternal Health Care Providers	16
3. Models of Childbirth Care Identified.....	17
DISCUSSION	33
1. Methodological Issues.....	33
2. Maternal and Neonatal Outcome of Childbirth Related to Model of Care	34
CONCLUSIONS	39
RECOMMENDATIONS	41
REFERENCES	43
ANNEXES	
ANNEX I: QUESTIONNAIRE FOR PROFILING MIDWIFERY SERVICES IN THE AMERICAS	49
ANNEX II: CASE STUDY PROTOCOL FOR PROFILING MIDWIFERY SERVICES IN THE AMERICAS	63

PROLOGUE

Professional midwifery is considered to be the “linchpin” of the obstetric team and the backbone of modern antenatal and childbirth care. Historical (Sweden and Holland) as well as contemporary (Chile and Sri Lanka) evidence has shown that the development of national midwifery coverage is the single most important measure in reducing maternal and perinatal mortality. It is moreover remarkable that such improvements took place while the countries were still classified as low-income countries.

Key concepts describing the role of the midwife are ‘appropriateness’ and ‘coverage’. Appropriateness refers to having the correct background in education and training, which in turn respond to the specific goals of caring for normal pregnancy and childbirth, i.e. applying evidence-based midwifery practices and procedures while being prepared to intervene only when required. Interestingly, the word ‘obstetric’ is derived from the Greek ‘obstetros’, which means waiting, standing aside, a concept that was used for midwives already in the ancient Greece. Physician led childbirth care, on the other hand, tends to have unmotivated high surgical intervention rates, which reportedly result more often in maternal and neonatal complications. Appropriateness also refers to cultural and social sensitivity, aspects that are particularly important for maternal health care providers relating to poor and vulnerable populations. Finally, appropriateness includes the aspect of cost-effectiveness, as educating and paying physicians are more expensive compared to midwifery education and salaries.

‘Coverage’ throughout a country, particularly in rural areas, is easier to achieve if people from the periphery are given access to maternal health education. In general, more than 50% of maternal and neonatal deaths occur in the rural areas, a strong rationale for promoting coverage with competent professionals. Advanced medical education (physicians), however, predisposes city dwelling whereas medium-level midwifery education appears to favour the model of national coverage and successful reduction of maternal mortality, as shown in Chile.

The rationale for profiling midwifery services in the Americas is to explore the extent of midwifery services and practices. Such information is needed in order for PAHO member countries to assess maternal and neonatal health care and outcomes in relation to i) the prevailing maternal health care system and ii) WHO guidelines, which are founded on international experience and research. Problems might be identified that can be addressed by choosing another model of care. Moreover, the issue of cost-effectiveness of maternal health care need to be highlighted. Many middle and low-income countries cannot afford a physician-based model nor can the individual woman and her family afford to seek care from such a model.

The process of profiling midwifery services started in December 2003 by developing a questionnaire, which all member states are expected to answer. A case study protocol, to be used in selected countries representing all regions of the Americas, was also completed in 2003. These instruments and the profiling study was presented at the first Regional Conference of Midwives in the

Americas held by the International Confederation of Midwives (ICM) in Trinidad Tobago. This was an excellent opportunity to meet midwives from all over the continent and to engage them in the forthcoming study.

The actual literature review was conducted during April-June 2004, and resulted in identification of five models of maternal health care practiced throughout the region. The models will be compared with incoming data from questionnaire and case studies and revised if actual data present other and newer information.

A variety of collaborating partners are involved, among these regional, national and local universities and professional associations. The profiling study will proceed as the questionnaires are returned and the case studies undertaken. Moreover, studies comparing the outcomes of physician based and midwifery based maternal care are planned for Brazil, one of the PAHO member countries.

EXECUTIVE SUMMARY

The actual document is the first of three steps, i) a literature study, ii) a questionnaire study and iii) selected case studies, in an effort by Pan American Health Organization (PAHO) to profile midwifery services and practices in the Americas. A variety of collaborating partners are involved, among these regional, national and local universities and nursing associations.

The World Health Organization (WHO) has voiced concern about continued high maternal and perinatal mortality rates, which to a great extent is blamed on slow progress in introducing skilled attendants during pregnancy and childbirth. A five + five strategy, which focus on assisting the nations in providing skilled care to pregnant and women in labor, was launched in 2000. One of many efforts related to the strategy is a worldwide profiling of midwifery presently conducted by WHO in Geneva.

Midwives are worldwide regarded as a key actor to improve maternal and perinatal health. Historical and contemporary evidence (Holland, Sweden, Sri Lanka and Chile) indicates that maternal and perinatal mortality can be reduced by the introduction of well-trained midwives on the primary as well as on the secondary and third level of care. However, WHO has introduced a new concept describing the professional, which are regarded essential in the effort to improve maternal health, namely 'skilled attendant', which refers to a person with midwifery skills, including not only midwives but also physicians and nurses. This might be related to the fact that many countries do not train midwives but rely on physicians and nurses with midwifery knowledge to care for women during childbirth.

Maternal health in the Americas, measured by maternal mortality, is extremely diverse. Canada and USA present statistics in par with other high-income countries (< 10/100,000 per live births) compared to Haiti, which has a maternal mortality higher than 500/100,000 per live births. On the other hand, maternal health in the Americas is more advanced than other regions of the world, in particular Africa.

The purpose of the literature study was to identify the system of maternal health care chosen by each country with a particular focus on midwifery as a profession. Extensive database search has been conducted with limited results, in particular from the Caribbean and South America with the exception of Chile, Mexico and Brazil.

Five models of childbirth care were identified of which only one was composed primarily of professional midwifery (Model III), including Chile, Peru, Belize, Costa Rica and the non-Latin Caribbean countries. Limited professional midwifery or midwifery in progress (Model IV) was found in countries such as Argentina, Brazil, USA and Canada. Traditional midwifery combined with institutional obstetric care mainly by physicians and nurses (Model I, II) prevails in Mexico, Haiti, the Central American Isthmus and parts of the Andean Area. Model V, Institutional obstetric care without professional midwifery is applied in Cuba and Colombia.

In conclusion, professional midwifery is underdeveloped in all regions of the Americas except for the non-Latin Caribbean and childbirth care is extremely physician dominated and medicalized with high rates of caesarean sections. The Maternal mortality rates are highest in countries where the percentage of skilled attendance is low (Model I, II). It is recommended that the Ministries of Health in various countries consider the historical and contemporary evidence indicating that generalized institutional and community professional midwifery is the main key to improve maternal and perinatal

health. Traditional midwifery should not be replaced before skilled care is available. On the contrary, collaboration between traditional and professional midwives should be promoted in order to encourage women to seek professional care during childbirth.

INTRODUCTION

The World Health Organization (WHO) has moved from the initial Safe Motherhood Initiative (SMI) towards the “Making Pregnancy Safer” project in a global effort to improve maternal and perinatal health. In December 2000, a majority (189 countries) endorsed the Millennium Declaration in which one of the key goals is to reduce maternal mortality to 75% by the year 2015.

In the majority of countries, there are according to WHO four key types of providers of maternal and newborn care, of which only the two first categories fall within the definition of a skilled attendant.

- General physicians with midwifery skills and obstetricians/gynecologists
- Professional midwives and nurse/midwives
- Care providers without midwifery skills – a heterogeneous group who can deliver some parts of interventions known to be effective, but only under supervision
- Traditional midwives, family members and not in the least, women themselves

Progress has been slow, though, for countries to increase access to skilled care and WHO therefore argue that it is time to integrate this effort into national health and development plans. WHO therefore proposes an accountability framework for urgent and concerted actions, both at international and national levels, which aims to assist key actors identifying and fulfilling their core responsibilities and roles in achieving skilled care during pregnancy and childbirth proposes (WHO, 2000). The proposed 5 + 5 strategy includes the following components to reduce maternal and newborn mortality and morbidity (Box 1).

Box 1. The 5+5 Strategy

5 key partners	5 key strategies
Health care professionals at all levels	Setting norms and standards to define the care skilled attendants should provide
Women, families and communities	Develop, deploy and manage human resources to ensure skilled attendants where they are needed
National governments, public health institutions and teaching institutions	Strengthening (creating) an enabling environment within the health sector and the community
Private sector and philanthropic organizations	Mobilization of human, financial and knowledge resources
International donor and technical agencies	Monitoring and evaluation

As a natural extension of this proposal, WHO is presently undertaking a worldwide mapping of maternity services in which mapping of midwifery services is included as a specific item. The Pan American Health Organization (PAHO) has decided to undertake similar efforts to delineate midwifery services and practices in the Americas and the Caribbean. This effort will be undertaken in

collaboration with several partners, among others University of West Indies, Association of Faculties and Schools of Nursing in Latin America, International Confederation of Midwives (regional) and WHO Collaborating Centers for Nursing and Midwifery, country level partners (ministries of health, universities, nurses and midwifery associations), Swedish International Development Agency (SIDA); and Halmstad University, Sweden.

GENERAL BACKGROUND

1. MIDWIFERY

The International Confederation of Midwives (ICM) and the Federation of Obstetricians and Gynecologists (FIGO) defined the midwife as a “person who, having been regularly admitted to a midwifery educational programme, duly recognised in the country in which it is located, has successfully completed the prescribed course of studies in midwifery and has acquired the requisite qualifications to be registered and/or legally licensed to practise midwifery.

She must be able to give the necessary supervision, care and advice to women during pregnancy, labour and the postpartum period, to conduct deliveries on her own responsibility and to care for the newborn and the infant. This care includes preventative measures, the detection of abnormal conditions in mother and child, the procurement of medical assistance and the execution of emergency measures in the absence of medical help. She has an important task in health counselling and education, not only for the women, but also within the family and the community. The work should involve antenatal education and preparation for parenthood and extends to certain areas of gynaecology, family planning and childcare. She may practise in hospitals, clinics, health units, domiciliary conditions or in any other service” (ICM/FIGO/WHO, 1992).

Globally, the role of the midwife has been that of assisting women in normal childbirth, however, as can be seen from the definition above, the areas of competence have been expanded to include emergency care in the absence of medical assistance. The skills taught to midwives vary according to where she/he functions within the maternal health care services. It is likely though, that the more peripherally the midwife is located, the more responsibilities she/he is expected to shoulder (Liljestrand, 1998).

Historical, as well as contemporary evidence shows that the introduction of skilled midwives plays an important role in reducing maternal mortality. In Chile, for example, professional midwives have been established in every community for a long period of time and are considered to have had a significant impact on the low maternal mortality, 26/100, 000 live births (Segovia, 1998). Countries such as Sri Lanka and Thailand have also introduced skilled midwives in all levels of maternal health care services, an intervention which is considered to have positively influenced maternal health (Brouwere and Lerberghe, 2001).

The skilled midwife has been referred to as the “linchpin” of the obstetric team (Kwast & Bentley, 1991) and the “backbone” of modern childbirth care (Liljestrand 1998). The midwife, however, is dependant on an enabling environment, which includes adequate theoretical knowledge and practical skills, essential drugs and equipment and a functional referral system in order to provide quality care that can have an impact on the maternal and neonatal health (Maclean, 2003).

Midwifery is practiced in various manners throughout the world, and the arguments regarding which model should be advocated runs high among midwives.

The ‘Midwifery Model of Care’ is based on the premise that pregnancy and childbirth are normal life events and should not be interfered with unless complications occur and includes monitoring of the physical, psychological, spiritual and social well being of the woman and her family

throughout the childbearing cycle. The model is woman-centred and the midwife has an autonomous role, i.e. she runs her own practice without being supervised by physicians and obstetricians.

There are, however, other models of midwifery care: the most common are a) the midwife within a public health team at the community level and b) the midwife within the obstetric team at the institutional level. The autonomy of midwifery varies according to the national health system. In Sweden, for example, midwives are licensed to practice wherever they desire, however, the maternal health care services are institutionalized and the midwife, therefore, mostly functions within an obstetric team. She monitors normal as well as pathological labors and deliveries but in close collaboration with the obstetricians on duty.

2. SKILLED ATTENDANCE

According to WHO, 'skilled attendant' refers exclusively to a person with midwifery skills such as midwives, physicians and nurses who have been trained to proficiency in the skills necessary to manage normal deliveries and diagnose, manage or refer obstetric complications (WHO/UNFPA/UNICEF/WB, 1999). This health professional is the key person in the continuum of care model. When addressing the needs of pregnant women, continuum of care, i.e. flow in services from one level to another – from low-risk to high risk and emergency care, must be a priority. The provision of continuity of care requires a functional health care system and adequate infrastructure but also adequate and effective communication and collaboration not only between skilled health professionals but also traditional midwives, which provide care during childbirth to a great number of women.

It is essential when discussing maternal health care services, in particular in low and middle-income countries, to establish why there is a shortage of skilled attendants, and how the shortage is distributed within the population. It is a fact that maternal and perinatal mortality and morbidity is higher among the more vulnerable population (De Brouwere and Lerberghe, 2001) and that these often reside in rural areas where services are scarce. In order to provide recommendations that will target the most vulnerable group of women, and thus be able to reduce maternal mortality, it is crucial to explore the distribution of services within a country.

There are critical factors, which need to be considered when discussing how to provide skilled care for all women and newborns in a country, and the conditions will obviously vary extensively from country to country depending on factors such as the geographical diversity, the existing health professionals currently providing maternal health care services, the organization and structure of the health care system, specific needs identified in the maternal population and the reporting and monitoring system.

The socio- economic and political situation moreover greatly influences availability of services. Conflict affected populations, for example, are extremely vulnerable and often void of care due to internal displacement, also of health professionals.

3. THE MATERNAL HEALTH SITUATION IN THE AMERICAS

Whereas the overall maternal mortality ratio (MMR) estimated for Latin America and the Caribbean is 190/100,000 live births, the whole of the Americas presents large inequalities in maternal mortality compared to other regions of the world (PAHO, 2002). Canada reports an MMR of 4/100,000 live births (lifetime risk of dying is one woman per 8700 deliveries) in contrast to Haiti, which reports 523/100,000 live births (lifetime risk of one woman per 29 deliveries). The inequalities are obvious also within regions, Chile, for example has an MMR of 23/100,000 whereas Bolivia has 390/100,000 live births. Moreover, the differences within a country are also extensive. In Bolivia the

MMR ranges from 36 to 937/100,000 live births, indicating inequalities between urban and rural districts, a feature also seen in Nicaragua (Pettersson et al, 2002).

The most common causes of maternal deaths are hemorrhage, sepsis and toxemia followed by complications of puerperium. Abortion is believed to be a major contributor to maternal deaths. Whereas 20 countries in the region have recognized this (PAHO, 2002), others avoid presenting the abortion figures in the national statistics (Pettersson et al, 2002). Whereas many childbirth complications which lead to direct maternal deaths can be related to unavoidable factors, WHO has identified HIV/AIDS as an underlying factor in some cases of maternal deaths. It is estimated that more than 300,000 women are HIV infected, the majority of these in the Caribbean. Haiti is also severely affected, about 13% of pregnant women tested positive for HIV in 1996 (PAHO, 2002).

Another serious problem is the high rates of teenage pregnancies. In Nicaragua, for example, it was not uncommon for young girls who lacked prospects for their future to see motherhood as a chance to “have something of their own” (Pettersson et al, 2002).

The number of women giving birth with skilled care is quite high in the region, approximately 75% (PAHO, 2003), which probably indicates substandard care of poor quality.

The Americas is also a region where women in many countries predominantly are attended to by physicians or obstetricians during childbirth, As a result, childbirth care is often conducted with increased rates of cesarean sections and with routine practices, which through evidence-based research have either been found contraindicated (episiotomies) or invalid (shaving and enema) (Enkins, Keirse, et al. 2001).

There have been extensive changes in the Region, which are characterized by a growing number of democracies, political instability and war as well as widespread corruption on the governmental level. PAHO 2002 Even if national health expenditures have increased somewhat, it appears that inflation and distribution of finances to specialized technological services have “eaten up” the additional funding.

PROBLEM STATEMENT

Midwifery, both as a specialty of nursing and as a direct entry profession, has made important contributions to maternal and infant health in the Americas over the last decades. Many Caribbean and several Latin American countries, which have a long history of midwifery and/or nurse-midwifery services (Chile, Costa Rica and Uruguay) have experienced improvement in maternal and neonatal health whereas other countries with professional midwives and/or nurse-midwives have not yet achieved the same good outcomes for mothers and infants.

The actual and potential contribution of midwifery services to making pregnancy safer for mothers and infants has not been systematically analyzed in the countries of the Region, a task that is regarded as crucial in order to provide recommendations and technical assistance to the countries.

AIM

- To orient PAHO's future support to countries for midwifery services and maternal/infant health.
- To contribute to WHO initiative of worldwide profiling of midwifery services and practices.
- To complement other work to address the Millennium Development Goal on skilled attendance at birth.

METHODOLOGY

The profiling of midwifery services plan is to carry out a descriptive analysis of the situation of midwifery services and midwifery education in the Americas using a *questionnaire* (Appendix I). Each country is expected to conduct a survey, which includes demographic and other basic indicators, information related to national maternal health services, provision of maternal health services, traditional midwives input to maternal health care, nurse and midwife education and legislation of nurse/midwife practices.

The questionnaire has been peer reviewed by several institutions and field tested in Jamaica where a few items were added, which reflected the Jamaican and the Caribbean setting. The questionnaire will be translated to Spanish, Portuguese and French in order to obtain baseline information from all 35 countries in the region. Each country is encouraged to provide additional pages of information relevant to their maternal health care services and midwifery practices. The questionnaires will be analyzed using descriptive statistics.

In order to have a more comprehensive understanding of factors influencing the availability as well as the use of maternal health care and midwifery services, an in-depth analysis applying the *case-study approach* (appendix II) will be conducted in selected countries; at least one country from each of the sub-regions. The analysis will be conducted statistically as well as qualitatively.

A *literature review*, which is presented in the actual report, has been conducted in order to identify models of maternal health care services in the Americas. The literature review has been conducted by using the following search engines: Pubmed, Popline, WHOLIS, Pop Planet, Lilacs Express, EBSCO Nursing Collection, EBSCO Alt Health Watch, Elsevier Science Direct and SCIELO. A variety of links, which have appeared on the different websites, have also been consulted.

A catalogue for each country in the Region was created where essential information related to maternal health care and midwifery services was entered.

RESULTS

1. SUMMARY OF LITERATURE SEARCH

No literature was found for five member countries in the Caribbean (Antigua & Barbuda, Saint Kitts & Nevis, Saint Lucia, St Vincent and the Grenadines and Suriname) on Pubmed whereas two relevant articles related to Grenada appeared on Popline. The quite limited information available was extracted from websites providing country profiles (PAHO, www.earthtrends), which gave the percentage of skilled attendance at birth but not the differentiation of health professionals involved. Valuable information about the Caribbean was also received through personal information (Hewitt, 2004; ICM Conference, 2004).

A large amount of the search hits, especially in Pubmed, were letters from midwives visiting the various countries, and more than 60% of the abstracts were unavailable. Close to 70% percent of the articles were found by applying the search words midwives and midwifery related to traditional midwifery.

Below is a summary of the “hits” and the number of relevant studies identified for this study within the regions. More than 70 % of all hits related to midwifery, midwives, and midwifery education were identical.

Table 1. Search results

Search Words	Midwifery	Midwifery education	Midwives	Nurse/ midwife	Relevant material extracted
World	9,933	3,351	14,429	2,187	
North America	810	205	872	245	31
Mexico	66	26	84	16	5
Central American Isthmus	53	23	84	7	19
Latin Caribbean	9	3	24	3	6
Andean Area	37	14	52	6	8
Brazil	4	23	45	40	7
Southern Cone	30	16	47	7	12
Non-Latin Caribbean	4	7	33	20	15
Total	1013 (10%)	317 (9.5%)	1241 (8.6%)	344 (15.7%)	103 (3.5%)

2. TERMINOLOGY APPLIED FOR MIDWIFERY MATERNAL HEALTH CARE PROVIDERS

A variation of terminology and titles are applied to non-physician health professionals, which provide childbirth care in the different regions of the Americas. The majority of these are presented in Box 1.

Box 1. Midwife terminology

SPANISH	Country in which title/name is used
Matrona	Chile, Bolivia
Enfermera Partera	Puerto Rico
Obstetriz	Ecuador, Peru
Enfermera Obstetriz	Bolivia, Mexico
Enfermera Obstetra	Nicaragua
Obstetriz Licenciada	Paraguay, Peru
Obstetriz Técnico	Paraguay
Obstetriz Auxiliar	Paraguay
Obstetriz Rural	Paraguay
Partera Tradicional	Guatemala, El Salvador, Honduras, Nicaragua, Mexico, Panama, Paraguay
Partera Empirica	
Comadrona	Guatemala
PORTUGUESE	
Enfermeira Obstétrica	Brazil
Obstetriz	Brazil
Auxiliar de Obstetriz	Brazil
Parteira Tradicional	Brazil
FRENCH	
Sage Femmes	Haiti
ENGLISH	
Certified Nurse Midwife (CNM)	USA
Certified Midwife (CM)	USA
Certified Professional Midwife (CPM)	USA
Nurse/ Midwife	The Caribbean
Single Trained Midwife	Jamaica, Guyana
Auxiliary Nurse/Midwife	The Caribbean
Lay Midwife (LM)	USA
Autonomous Midwife	Canada
Rural Health Nurse	Belize

3. MODELS OF CHILDBIRTH CARE IDENTIFIED

In order to describe the actual situation of midwifery services, which according to WHO can be provided by various groups of professionals as long as they have acquired midwifery skills (see Box 2a and 2b), it appeared feasible to design models of the different approaches to care during childbirth identified in the literature and categorize the countries according to these models.

Box 2a Midwifery Competencies (ICM, 2002 as described in Fullerton, 2003)

- Midwives have the requisite knowledge and skills from the social sciences, public health and ethics that form the basis of high culturally relevant, appropriate care for women, newborns and childbearing family
- Midwives provide high quality, cultural sensitive health education and services to all in the community in order to promote healthy family life, planned pregnancies and positive parenting
- Midwives provide high quality antenatal care to maximize the health during pregnancy and that includes early detection and treatment or referral of selected complications
- Midwives provide high quality, culturally sensitive care during labour, conduct a clean and safe delivery, and handle selected emergency situations to maximize the health of women and their newborns
- Midwives provide comprehensive, high quality, culturally sensitive postnatal care for women
- Midwives provide high quality, comprehensive care for the essentially healthy infant from birth to two months of age

Box 2b. Midwifery Skills

- Essential skills and competencies for the major causes of maternal and neonatal mortality
 - **Hemorrhage**
 - **Sepsis**
 - **Severe pre-eclampsia and eclampsia**
 - **Prolonged and obstructed labor**
 - **Unsafe abortion**
 - **Neonatal problems (asphyxia, hypothermia)**

Five models were identified, as follows:

- I. Traditional midwifery and institutional obstetric care
- II. Institutional obstetric care and certified traditional midwifery
- III. Institutional and community professional midwifery and the obstetric team model
- IV. Institutional obstetric care, limited institutional and community professional midwifery and/or midwifery in progression
- V. Institutional obstetric care without professional midwifery care

3.1 MODEL I. TRADITIONAL MIDWIFERY AND INSTITUTIONAL OBSTETRIC CARE

The majority of women in this model give birth at home with traditional midwives, i.e. non-skilled attendance. Physicians, who are assisted by nurses and auxiliary nurses, attend to women in need of emergency obstetric care.

Table 2. Characteristics of countries categorized under Model I

	Population (thousands)	Economic Status	Female Literacy	Total Fertility Rate	MMR/* 100,000 live births	IMR/** 1000 live births	Attendant at Birth	
							Skilled	Unskilled
GUT	12,347	LMIC	63.2	4.2	98.1	39.0	40% (PH, N, AN)	60% (TM)
HAI	8,326	LIC	51.1	3.9	523.0	80.3	20-25% (PH, N, AN)	75-80% (TM)

Source: PAHO Basic Indicators, 2003 and UNFPA Country Profiles, 2003.

Abbreviations: TM = Traditional Midwife, PH = Physician, N = Nurse, AN = Auxiliary Nurse

* Maternal Mortality Rate, Deaths/100,000 live births

** Infant Mortality Rate, Deaths/1,000 live births

In Guatemala about 37% of all deliveries are assisted by skilled attendants, 34.1% by the physicians and 3.7% by nurses and auxiliary nurses. Guatemala does not educate professional midwives. A majority of the health professionals reside in the urban areas.

The rural areas, where 65% of the population lives and where the high-risk groups are concentrated, are largely covered by nursing aides, rural health technicians, traditional midwives, and volunteer community health promoters. There is no effective system in place for referrals and counter referrals (PAHO, 1998).

The vast majority of rural deliveries occurs in the home setting and are attended to by comadronas (traditional midwives) that charge between US\$ 1.50 and 8 for combined antenatal and delivery care (Lang & Elkin, 1997, Gleib & Goldman, 2000). Schieber et al (1994) found no significant differences in perinatal mortality in the group cared for by the traditional midwives compared to those cared for by physicians. However, these results need to be considered cautiously as the cases treated by physicians include high-risk pregnancies and complicated deliveries.

The training of comadronas varies extensively, from purely empirical to the formal course (15 days) offered by the Ministry of Public Health. For previously trained comadronas, the district health center holds monthly meetings and a retraining course of three days each year if funding is available (3). According to Gleib et al (2000), comadronas are likely to continue to be the key providers of pregnancy and childbirth care in the future even if access to modern childbirth care increases.

The majority of Haiti's population lives in abject poverty (CIA World Fact Book, 2003) and the internal disparities in regard to access to skilled care during childbirth are large. Of the rural population only 11% compared to 52% of the urban population are provided with qualified assistance (UNFPA 2003). Traditional midwives, approximately 11,000, cater to about 80% of all deliveries in Haiti. Many of these have received some training within a UNDP financed project (PAHO, 1998).

Haiti has, however, reintroduced professional midwifery education in the form of a one-year post-graduate course for nurses. The professional midwives will mainly be based in rural areas where the physicians are not working. Approximately 60 midwives have been educated, however only 30 are working as the government does not provide new positions for these professionals and they therefore

return to the position they held before entering the midwifery program. The professional nurse/midwives also assist home deliveries.

The two national referral hospitals are overloaded and account for 60% of all institutional deliveries, which are mostly attended to by physicians. Rural maternity beds, when available, are poorly utilized (Barnes Josiah, 1998). Haiti has the highest HIV/AIDS prevalence in the Americas (Communication, 29004)

3.2 MODEL II. INSTITUTIONAL OBSTETRIC CARE AND CERTIFIED TRADITIONAL MIDWIFERY

In this model, physicians and nurses attend to a majority of deliveries. Due to the fact that response to demands is inadequate, traditional midwives are viewed as a compliment to the professional health care system and integration of their services encouraged. In this model, traditional midwives are prohibited to function without being licensed.

Table 3. Characteristics of countries categorized under Model II

	Population (thousands)	Economic status	Female literacy	Total Fertility Rate	MMR/ * /100,000 Live births	IMR** /1000 live births	Attendance at Birth PH, N TM	
Bolivia	8,808	LMIC	81.5	3.3-6.4	390.0 (550)	66.0	59%	41%
Ecuador	13,003	LMIC	91.0%	2.8-4.3	91.7 (210)	33.4	70%	30%
El Salvador	6,515	LMIC	77.7	2.8-4.6	63.4 (180)	35.0	51%	49%
Honduras	6,941	LMIC	77.0	3.3-5.6	108.0 (220)	34.0	50%	50%
Mexico	103,457	UMIC	90.2	2.3-3.5	83.6 (65)	22.4	86%	20%
Nicaragua	5,466	LIC	67.8	3.1-5.4	87.0 (250)	35.0	65%	35%
Panama	3,120	UMIC	91.9	2.7	60.7 (100)	14.4	90%	10%

Source: PAHO Basic Indicators, 2003 and UNFPA Country Profiles, 2003.

* Maternal Mortality Rate, Deaths/100,000 live births

** Infant Mortality Rate, Deaths/1,000 live births

Abbreviations: PH = Physician, N = Nurse, TM = Traditional Midwife

Bolivia is expanding its safe motherhood efforts through the Universal Maternal and Insurance Law, providing free health services for women during pregnancy and for 6 months after delivery. Bolivia educates Enfermeras Licenciadas who undergo a 5-year university program and who may function within maternal health care services at all levels. Nurses can attend post-graduate courses in obstetrics, gynaecology and perinatal care and assist low-risk deliveries. These are called “matronas, obstetricas” and “enfermera obstetrica.”

About 20% of Bolivia’s 311 municipalities lack qualified health personnel. Training has therefore been provided to traditional midwives, health promoters, and other community resources over the past 20 years with the intention to meet the population’s health demands; over 5,000 of these trained midwives and health promoters are thought to be active within the health system (PAHO, 1998).

Traditional medicine is practiced widely, and almost every rural or marginal urban community has some kind of practitioner such as traditional midwives and/or traditional healers. The health system is gradually moving to incorporate traditional midwives into local care networks. Demand for these services is high and they are often used in conjunction with other public and private services (PAHO, 1998).

In Ecuador about 70% of women have access to skilled care during childbirth (UNFPA, 2003). However, there are great disparities between the urban and rural population (77% vs. 29% respectively) and the MNPI report (accessed 2004) states that Ecuador can only provide 50% of emergency obstetric care. There is also inadequate training of nurses and physicians in order to meet the demands.

It is estimated that about 51% of childbirths in El Salvador are assisted by skilled attendants at birth and the cesarean section rate is approximately 24% (PAHO, 1998). General nurses and auxiliary nurses attend low-risk deliveries whereas physicians attend high-risk deliveries. El Salvador has no midwifery program or specialization in obstetric care for nurses.

El Salvador has 3,200 registered traditional midwives who attend approximately 25% of all deliveries (PAHO, 2001). In addition, there is reason to believe that unregistered traditional midwives exist and attend deliveries in rural areas. Finger (1994) found that 7 of 10 women in El Salvador reported that they suffered from chronic health problems due to complicated deliveries. This is supported by PAHO (1998) who states that the leading cause (18.3%) for hospitalisation among women aged 15 to 44 in 1996 are complications after delivery (PAHO, 1998).

In Honduras, there has been a steady increase of institutional deliveries (33-44%) in the period 1990-1997; however, about 50% of all deliveries still take place at home with traditional midwives. Honduras advocates the integration of traditional midwifery into the public maternal health care services.

Rodgers, Little and Nelson (2004) found that training of traditional midwives in Honduras improved their performance compared to a control group, but training alone was not regarded as sufficient to improve maternal mortality and morbidity. The authors advocate the integration of trained traditional midwives with the public health system, developing a transportation system and addressing underlying social and health care system conditions, which influence women's reproductive health status negatively.

Honduras does not educate nurse/midwives or direct entry midwives. Nurses and auxiliary nurses are involved in midwifery services together with physicians and a few obstetricians. There are insufficient numbers of health professionals and the situation is exacerbated by the unequal geographical distribution of resources; in some communities the job market for health personnel is saturated, whereas in those communities that are most inaccessible many positions are vacant. Honduras accounts for > 50% of all HIV/AIDS cases in Central America.

According to Davis-Floyd (2003) biomedicine has taken over childbirth in Mexico, and the caesarean section rate is just below 40%, which is one of the highest in the world. Professional midwifery is today more or less absent in Mexico; only a few obstetrical nurses with post-graduate studies in maternal-infant health attend deliveries in some small clinics. Mexico has, however, a long experience of midwifery training, which began in 1792 and had in the 19th century developed into university based midwifery programs (Romero, 2002). In 2002, four students graduated from a new midwifery program called CASA (ICM, 2004).

The majority (74%) of all deliveries are medically attended (Hunt, Glanz & Halperin, 2002), whereas the MNPI study (accessed 2004) argues that skilled attendants assist 86% of all deliveries. Despite the predominantly medicalized model, where physicians are assisted by the university educated nurse, quite a few traditional midwives exist and attend more than 45% of deliveries in

certain rural areas, and > 20 % in communities larger than 20,000 inhabitants (Camey et al, 1996). The authors emphasize the importance of traditional midwifery in rural areas, but recognize that deficiencies noted in their services should be remedied through further training. It is also suggested that interaction between traditional midwives and physicians in a referral system might reduce maternal and neonatal morbidity and mortality.

Hunt et al (2002) who explored childbirth care-seeking behavior among women in the Chiapas district in Mexico found that although medical services for birthing were readily available, the women still preferred the attendance of traditional midwives during childbirth. The reasons given for this preference was positions and techniques applied by physicians, birthing location and the presence of relatives.

About 45% of deliveries in Nicaragua took place within hospitals in 1995. But according to a recent estimation, which does not take into account the location of birth, skilled attendants assist 65% of all deliveries (UNFPA, 2003). The remaining 35% of deliveries are assisted by traditional midwives. In certain rural areas traditional midwives attend close to 60% of all deliveries. (MINSAL/USAID, 2000). Nicaragua has a long, established tradition of traditional midwives and the Ministry of Health (MINSAL) has registered about 5000 of these throughout the country. The majority of the traditional midwives are empirically trained. Most of them, however, have received some training by UNICEF. The government recognizes the traditional midwife as an indispensable cadre in the maternal health care services but are planning to prepare an obstetric nurse, who will function, where physicians are not available (Pettersson et al, 2002). There is no plan to substitute the traditional midwifery in the near future. On the contrary, it is considered essential that traditional and professional maternal health care providers need to collaborate in order to promote maternal and neonatal health.

Presently, there are no educational programs for professional nurse/midwives or direct entry midwives in Nicaragua. However, in 1988, Nicaragua initiated an educational program for obstetric nurses (*enfermera obstetra*) and 52 graduated. Very few of these are working as midwives, though, as they were only allowed to assist deliveries in one hospital in Managua. Instead, licensed maternal health nurses are trained who may function within maternal health care services. They do not, however, assist deliveries, at least where physicians and obstetricians are present (Pettersson et al, 2002).

Panama has no professional midwifery training. The coverage of skilled attendance at birth, mainly by physicians, is 90% and the cesarean section rate is approximately 19%. Traditional midwives (1500 or more) are registered with the Ministry of Health and undergo formal training. According to information, these attend the remaining 10% of deliveries

3.3 MODEL III. INSTITUTIONAL AND COMMUNITY PROFESSIONAL MIDWIFERY AND THE OBSTETRIC TEAM MODEL

This model, under which 16 countries have been categorized, midwives are the dominant caregivers and are part of the obstetric team, with physicians and obstetricians. The midwives function also in the community where they may be the only skilled attendant.

Table 4. Characteristics of countries categorized under Model III

	Population (thousands)	Economic status	Female literacy	Total Fertility Rate	MMR/* 100,000 live births	IMR/** 1000 live births	Attendance at Birth
Antigua & Barbuda	73	HIC	88.0%	2.3	65.4	22.3	3% DNM 97% N, NM, PH
Bahamas	314		95.5%	2.3	38.0	12.7	95% N, NM, PH
Belize	256	LMIC	94.1	3.1	68.4 (140)	21.2	80% NM, PH, OB 20% RHN, TM
Chile	15,805	UMIC	96.1	2.3	22.7 (33)	8.9	70% NM 30% PH, OB
Costa Rica	4,173	UMIC	96.0	2.2	35.3 (35)	11.2	56% PH, OB 41% NM
Dominica	79	UMIC	94%	2.0	Na	19.8	100 %
Grenada	80	UMIC	98%	2.5	Na	17.6	99 %
Guyana	765	LMIC	98.5	2.3	133.3 (150)	54.0	90% NM, DEM, N, PH, OB 5% TM
Jamaica	2,651	LMIC	91.7	2.3-3.3	106.2 (120)	19.9	80% NM, DEM PH, OB 20% ANM, OB
Paraguay	5,878	LMIC	93.0	3.2-5.6	120.0 (170)	19.8	60% NM, PH 40% TM
Peru	27,167	LMIC	86.7	2.2-4.3	185.0 (240)	33.4	56% NM, PH, OB 44% TM
St Kitts & Nevis	42	UMIC	97.5	2.4	246.6	12.7	99 % N, NM, PH
Saint Lucia	149	UMIC	82.0%	2.3	34.7	16.7	100%, PH, N
St Vincent & the Grenadines	120	UMIC	96.0%	2.2		19.2	99%, N, NM, PH, OB
Suriname	436	LMIC	91.0%	2.4	153 (230)	13.7	80% NM, PH, OB 20% NM, DN, TM
Trinidad & Tobago	1,303	UMIC	98.1	1.6	44.7 (65)	21.7	90% NM, PH, OB In public health 10% NM, PH, OB in Private care

Source: PAHO Basic Indicators, 2003 and UNFPA Country Profiles, 2003.

Abbreviations: ANM = Autonomous Nurse Midwives, DNM = District Nurse Midwife, NM = Nurse/Midwife, DEM = Direct Entry Midwife, DN = District Nurse, N = Nurse, RHN = Rural Health Nurse, TM = Traditional Midwife, PH = Physician, OB Obstetrician

* Maternal Mortality Rate, Deaths/100,000 live births

** Infant Mortality Rate, Deaths/1,000 live births

The majority (97%) of all deliveries in Antigua and Barbuda is institutional and care providers are nurses, nurse/midwives and physicians. District nurse midwives attend to the remaining 3% of childbirths. There was no clear reason for this situation, as the Government's policy sought to maximize the number of births taking place in institutions. The health sector is well equipped with adequate facilities, including a special care unit for premature infants. The country has few physicians, and about 220 nurses of whom 31 are district nurse/midwives (PAHO, 1998).

Community health services are provided through a network of nine health centers and 18 satellite clinics or sub centers linked to the health centers. These facilities are evenly distributed across the country. Teams that include the physicians (district medical officers), family nurse practitioners, public health nurses, district nurse/midwives, community health aides, and clinic aides provide services in the health centers. District nurse/midwives and clinic aides provide services at the sub centers with support from health center teams.

The only certified program for the education of health personnel is the School of Nursing. Difficulties exist in attracting qualified and motivated students to the nursing program.

In *Belize*, professional midwives attend most of the deliveries (about 80%) within hospitals. At one of these, the cesarean section rate was 26% in 1999. The collaboration between midwives and physicians varies in quality and lack of obstetricians and referral possibilities are major problems according to the midwives interviewed (Boyer, Klima and Jennrich, 2003).

Traditional midwives attend to a few deliveries, but the number is declining. It is moreover illegal to function without the official training offered by the Ministry of Health (Boyer et al, 2003).

Nursing and midwifery education is free and the Belize School of Nursing provides education for four categories of nurses, of which two are providing midwifery services: 1) the rural health nurse (2 years basic and community nurse/midwifery) and the nurse/midwife (1 year post-basic course). Most nurses in administration and teaching have pursued advanced nursing education at the University of the West Indies in Jamaica (Guild, 2000). As of May 2000, there were 60 professional midwives, 32 practical midwives and 44 rural health nurses with midwifery training who were licensed in Belize (Boyer et al, 2003).

All deliveries are reportedly institutional in *Chile*, and midwives, who are called 'matronas', are the main caregivers to about 70% of these. Private obstetricians attend to the remaining 30%. According to Segovia (1998) the midwife is in charge of normal delivery and besides monitoring and documentation they perform procedures such as episiotomy, suturing first and second-degree perineal lacerations, administration of oxitocics, analgesic drugs and some antibiotics.

Antenatal care services cover about 93% of all women in Chile, and the midwife is responsible for the majority of these services. The development of midwifery is illustrated in Table 5.

Table 5. Assistance at delivery in Chile

Year	Traditional Midwife (%)	Auxiliary Nurses (%)	Professional Midwife (%)	Physician (%)
1925	75	0	20	5
1955	12	43	36	9
1995	0	0	70	30

Source: MOH, Chile, 1997.

The Chilean midwife, who currently undergoes a five-year university program, has played an important role in the reduction of maternal and infant mortality, partly due to qualified care and partly due to the midwife's involvement in educating the community about the importance of skilled assistance at childbirth (Segovia, 1998). In 1965, family planning activities were introduced in the Maternal Health Care Program and midwives play an important role at the primary health care level.

The division of care within maternal health care services is shown in Table 6.

Table 6. Distribution of services provided within primary health care

Subprogram of women's care	Physicians %	Midwives %
Antinatal Care	8.2	91.8
Postnatal Care	1.4	98.6
Family planning	1.1	98.9
Obstetrics morbidity	54.1	45.6
Gynecological morbidity	33.1	66.0

Source: MOH, Chile, 1996.

Many years of experience indicate that the Chilean midwife has the capacity to make clinical decisions and diagnostics. The midwives work in close collaboration and in mutual respect and understanding with obstetricians. The legal body, SANITARY CODE, regulates the midwives professional practice role.

The rate of caesarean sections is, however, increasing in Chile, and ranges from 40-68% among women who are cared for by private obstetricians and from 12-14% by women who are attended to by the public system. The principal motivation of obstetricians for doing private maternity work was, according to Murray (2000), financial gains.

In *Costa Rica*, 98% of births take place within a clinical setting. Physicians and obstetricians assist about 60% of the deliveries and nurse/midwives the remaining 40%. Traditional midwives, who used to be the main provider of childbirth care in *Costa Rica*, attend very few births. Jenkins (2003) describes that the transition to institutionalize childbirth care began in the 1950's and that 'biomedicalized' health professionals gradually replaced traditional midwives. The latter were tolerated only as "temporary bridges to be burned" once hospitalization was achieved.

In 1989 the law pertaining to midwifery was revisited to gain further control of midwifery practices and homebirths were no longer allowed, only those who could not have timely referral to medical institutions (Decreto, 1989). Jenkins (2003) argues that the institutionalization of childbirth seeks to provide universal access to an elite model of care to the nation's people regardless of their social, economic or geographic isolation and that this model is visualized as the key to improved maternal and neonatal health.

Pregnant women have universal access to health care in *Dominica*, which is delivered through clinics and health centers. About 70% of all deliveries occur at Princess Margaret Hospital, the remaining childbirths take place at the home or in a health center. *Dominica* has a 5:1 ratio of nurses to physicians, which indicate that nurses or nurse/midwives are care providers during childbirth.

Two institutions in *Dominica* offer training for health care professionals; the government-run School of Nursing and the private, offshore Ross University Medical School. The program in the School of Nursing is tailored to the specific needs of *Dominica's* national health service, whereas the curriculum at Ross University leans toward external market demands (PAHO, 1998)

The maternal health system in *Grenada* is based on qualified nurse/midwives who provide comprehensive antenatal care with referral to an obstetrician in case of complications. All women are encouraged to give birth in the hospital, which today actually occur in 99% of all births.

Normal deliveries are attended to by nurse/midwives, who have established protocols to follow for management of life threatening situations. *Grenada* moreover has established effective referral systems, good record keeping and is reportedly offering women-centered maternity care with

limited resources and good results (Laukaran, Bhattacharya and Winkikoff, 1994). About 200 nurse/midwives work in Grenada's three hospitals (PAHO, 1998).

In *Guyana* about 40% of the population lives in absolute poverty with the most vulnerable population being the indigenous groups. Guyana also experiences the highest prevalence of HIV/AIDS (7%) in the region. Reproductive health care is provided by public, private and nongovernmental sectors, including Safe Motherhood Initiatives. About 95% of all women are covered by antenatal care services, which are mostly provided by nurses and midwives (see Table). Midwives also attend the majority of deliveries and provide the available postpartum care. Guyana Nursing Council regulates the professional health practices for nurses and midwives.

Table 7. Nurse and Midwife Education

Terminology	Program #	Duration	Teachers	BE	Other
Nurse/Midwife Post graduate	3	12 months	NM, P	RN or RNA	2-3 yrs exp.
Midwife (Direct Entry)	1	18 months	NM, P	5 yrs sec.	English
General Nurse c/midwifery knowledge	3	36 months	NM, P	5 yrs sec.	English
Nurse Assistant	3	24 months	NM	5 yrs sec.	English

Source: PAHO, country based questionnaire, 2004.

Guyana has no program for traditional midwifery, but traditional midwives attend to approximately 5% of deliveries, in particular the rural interior of the country.

In the public health sector, staff vacancies range between 25% and 50% in most categories. There is a continuing loss of trained personnel from the public to the private sector and to other countries (PAHO, 1998, UNFPA, 2003).

More than 80% of the deliveries in *Jamaica* take place in the main public maternity hospital serving the Kingston/St. Andrew metropolitan area. Service is inadequate due to a shortage of personnel and beds (PAHO, 1998). According to recent information, Jamaica has 1,348 midwives who are nurses with a one-year postgraduate course in midwifery. The midwives do not conduct home deliveries (ICM, 2004). They may, however, have autonomous practice in collaboration with obstetricians, a fact which is described by Troy (2000). There is a shortage of senior midwives and these are therefore recruited from USA and Canada. Jamaica also educates Direct Entry Midwives (DEM) in a two year-program where the 1st year is basic nursing courses and the 2nd year is midwifery. Jamaica is a member of the Caribbean Midwives Association.

Jamaica has quite a few district midwives, who with one to two years training are registered to practice in the field of midwifery including assistance at homebirth, antenatal and postpartum care (Figueroa, Ashley and McCaw-Binns, 1990).

The country has a relatively strong national policy on safe motherhood and education is quite well developed. What needs to be improved according to the MNPI study (2003) is more equal access to delivery care, in particular skilled attendance at birth.

It seems that *Paraguay* has more midwives than nurses, and many more physicians in relation to nurses (3,730 physicians, 433 professional nurses, and 1,547 licensed midwives). Paraguay has a midwifery nurse association and educates midwives at the university level as well as technical midwives and auxiliary midwives (ICM Conference, 2004). Sixty percent of all deliveries are conducted at institutions, where midwives take care of low-risk deliveries and assist/support the obstetricians at referral hospitals. Paraguay also has traditional midwives, who attend about 40% of the childbirths (PAHO, 1998).

Despite having trained a substantial amount of midwives (> 11 000) in *Peru* (Madison, 2002), 40% of deliveries are still attended to by traditional midwives. Inequality in access to care is huge, skilled assistance is available for 85% of childbirths in the urban areas whereas only 30% of deliveries in the rural areas. Due to these disparities, skilled attendance at birth nation-wide is only available for 56% of the population (UNFPA, 2003). The primary care provider for low risk women during antenatal care and childbirth is the professional midwife. Obstetricians provide hospital-based care for women at risk and provide a backup system for the midwives (obstetriz) who are highly respected and trusted. They are usually in charge when the obstetrician is absent

There seems to be little collaboration between professional midwives and the traditional midwives (parteras), though. The traditional midwives are blamed for maternal deaths taking place in the community, which is the main reason why professional midwives reject to cooperate with them (Madison, 2004).

The Ministry of Health is responsible for posting health professionals in the rural zones and each health professional must spend a year in either an urban or rural underserved area. However, people from the cities are reluctant to do this, because the indigenous language is not spoken by the “city people” (Madison, 2004).

Ethnically, socially and culturally, Peru has one of the most diverse populations in Latin America. More than 50% live in poverty, and 15% of these live in extreme poverty (UNFPA, 2003).

The midwifery profession was established in *Peru* in 1826 by a supreme decree when the first College of Midwives was formed. In 1985, the College of Midwives was incorporated in to the medical school of the University of San Marcos; since then university training has been the only manner to become a midwife in Peru (Madison, 2004). The midwifery education in Peru is 5-6 years, which leads to a Bachelor degree in Obstetrics. After completion of a scientific work or an exam, the midwives receive the professional of “Licenciado/Licenciada en obstetrician.” The midwifery career is distinctly separated from nursing (Neglia, 2004). Peru also has a Masters program in midwifery.

In *Saint Kitts and Nevis*, primary care services cater to all pregnant women through weekly prenatal sessions held at all health centers. An unknown number of pregnant women receive care exclusively from private physicians. All deliveries in the country take place in hospitals, and are presumably assisted by nurses and physicians. In 1997, specialist obstetric care was introduced at the community level. All deliveries are in hospitals; breastfeeding is actively promoted. Equipment on both islands has been upgraded, making available mammography and ultrasonography services (PAHO, 1998).

An estimated 50% of pregnant women use the public health clinics for prenatal care in *Saint Lucia*, and of these, 10%–15 % register before 16 weeks. The remaining 50% of pregnant women attend private facilities. As of 1994, pregnant women have been advised to have a routine ultrasound examination at 20–22 weeks gestation.

The Sir Arthur Lewis Community College is the only local institution that trains health professionals. The college began training of general nurses and midwives in 1988 and the Nursing Council is responsible for the registration and monitoring of nurses and midwives.

The two district hospitals provide primary care as well as in-patient care for maternity units for low-risk deliveries (PAHO, 1998).

In *St Vincent and the Grenadines*, 23% of total births occur at the district level and the remaining births take place within hospitals (PAHO, 1998). The protocol governing the delivery of maternal and child health services stipulates a minimum of six prenatal checks. Records show that 82% of all pregnant women satisfy this criterion. Virtually all mothers and newborns receive the minimum of three postnatal checks within the first ten days of delivery (PAHO, 1998). According to

information, about 99% of all deliveries are attended to by skilled professionals, and this includes nurse/midwives, nurses and physicians (Hewitt, 2004)

Nursing education is provided at the Government's St. Vincent 's School of Nursing. Health care workers also receive education internationally, including North America and Europe.

About 80% of deliveries in *Suriname* take place in hospitals where midwives, physicians and obstetricians provide skilled care. District nurses, midwives and traditional midwives attend the remaining 20% of deliveries in the interior, rural parts of the country (Eichler 1999). Approximately 12% of all newborns weigh < 2,500 grams, predominantly children born to teenagers and Hindustani women. The Medical Mission assists the remote population in accessing care through their radio communication system within 24 hours and transport is provided either by plane or by boat.

The faculty of medicine in *Paramaribo* train midwives (Eichler, 1999). The Central School of Nursing and the intramural training programs of the Academic Hospital and St. Vincentius Hospital are training nurses and nursing auxiliaries, but the programs cannot keep up with the demand (PAHO, 1998).

Safe motherhood initiatives have been successful in *Trinidad and Tobago*, and led to a considerable decline in maternal mortality over the last decades. Teenage fertility, however, remains a significant problem. About 90% of all deliveries take place in government institutions, which have facilities for cesarean sections, blood transfusions, and acute neonatal care and are mainly assisted by the midwives in collaboration with obstetricians. The remaining 10% take place in private hospitals and nursing homes (most of which have facilities for cesarean sections), with minimal numbers taking place in homes and "other places." Only about 10% of mothers use postnatal services at health centers (PAHO, 1998).

Trinidad and Tobago offers two ways of entering midwifery; a direct entry program, which is a two-year education for auxiliary nurses and a nurse/midwifery program, which requires the completion of a three-year nursing program. After trainees have gained some work experience, they are accepted into an eighteen-month midwifery program. The Ministry of Health oversees both programs, but there is increasing pressure to bring them under the auspices of the university (Lewis, 2000).

Trinidad and Tobago has an Association of Midwives.

3.4 MODEL IV. INSTITUTIONAL OBSTETRIC CARE, LIMITED INSTITUTIONAL AND COMMUNITY PROFESSIONAL MIDWIFERY AND/OR MIDWIFERY IN PROGRESSION

In this model, the majority of deliveries occur in hospitals and physicians and obstetricians dominate childbirth care. Midwifery plays a limited role and nurse/midwives or midwives care for few women.

Table 8. Characteristics of countries categorized under Model IV

	Population (thousands)	Economic status	Female literacy	Total Fertility Rate	MMR/* 100,000	IMR/** 1000	Assistance at Birth N/NM PH/OB	
Argentina	38,428	UMIC	97.1	2.4	35.0 (85)	16.3	25%	75%
Barbados	270	UMIC	99.7%	1.5	80.5	14.7	1%	99%
Brazil	178,470	UMIC	88.1%	2.2	55.8 (260)	28.3	10%	80% 20% TM
Canada	32,500	HIC	96.9%	1.5	2.4	5.3	< 5%	95% FPH, OB
Dominican Republic	8,745	LMIC	84.8%	2.7	69.0 (110)	31.0	3%	97%
Puerto Rico	3,879	UMIC	94.5	1.9	20.2	9.2	10%	Probably 90%
Uruguay	3,415	UMIC	98.2	2.3	11.1 (50)	13.5	10%	Probably 90%
USA	294,043	HIC	99.5%	2.1	9.9	6.9	10%	90%
Venezuela	25,699	UMIC	93.1	2.7	60.1	17.7	5%	90%

Source: PAHO, Basic Indicators (2003), UNFPA Country Profiles (2003).

FPH = Family Physicians

* Maternal Mortality Rate, Deaths/100,000 live births

** Infant Mortality Rate, Deaths/1,000 live births

In *Argentina*, childbirth takes place within hospitals. Despite the long tradition of midwifery that started in 1852, childbirth is presently medicalized. Argentina has four times more physicians than nurses or midwives, which explains the fact that 75% of all deliveries are attended by physicians and obstetricians.

Institutionalization of childbirth began in earnest during the 1970s when the midwives cared for all low-risk deliveries and called the specialist when complications occurred. According to Szmoise & Vartabedian (1992), the medicalization of normal childbirth in Argentina includes early artificial rupture of membranes, general use of oxitocics and increased cesarean section rates.

Today, Argentina educates midwives (obstétrica licenciada) at the university level. The program is five years long, one basic year and four years of formal midwifery education (ICM, 2004).

Midwifery services in *Barbados* are institutionalized due to a ‘no homebirth’ policy and provided by obstetricians while nurses take the “backseat”. According to Newbrook (2004) there are no professional midwives in Barbados; however, recent information indicates that nurses can attend a one-year diploma program in midwifery (ICM Congress, 2004).

Routine enemas and shavings are conducted upon admission, the lithotomy position is routine and companions such as the fathers are rarely present. A large number of women are subjected to artificial rupture of the membranes and oxitocics to accelerate delivery. No partographs are used (Newbrook, 2004). Pediatricians attend to complicated neonatal cases and are present at birth in case meconium has been observed. Nurses are not permitted to suture the perineum nor are they empowered to manage or facilitate labor on their own.

In *Brazil*, approximately 97% of all deliveries registered in 1999 occurred in hospital settings and the cesarean section rate was 38%, excluding the private hospitals and clinics, which are known to have much higher rates, as high as 90%. The explanations for the high rates of caesarean sections in

Brazil differs, but includes aspects such as organization of obstetric care, training of health professionals and women's demand for surgical deliveries (Hotimsky, Rattner, Venancio et al, 2002).

Despite education of nurse/midwives and direct entry midwives, physicians and obstetricians attend to the majority of deliveries in Brazil. According to Gonzales & Tsunehiro (2002), only 50% of newly trained nurse/midwives work as midwives in the labor ward.

Besides conflicts between direct entry midwives and nurse/midwives, which were resolved in 1994 when ICM and ICN developed a joint statement with definitions for all categories in Brazil, including obstetriz (midwife), enfermera obstetra (nurse/midwife) auxiliar de obstetriz (auxiliary midwife) and parteira tradicional (traditional midwife) (MID/95/FAA/3, 1994), the midwives in Brazil also face difficulties in collaborating within the obstetric team.

Conflicts arise due to the obstetricians' medical view of childbirth compared to the midwives view of labour as a natural procedure, which should not be interfered with. The obstetricians do not favor the midwives habit of applying the sitting position, letting women walk during labor and being accompanied in the labour room. Midwives on the other hand do not approve of the frequent use of oxitocics. According to the midwives, professional pride, hierarchy and fear of losing territorial grounds causes the obstetricians not to let them become full-fledged members of the obstetric teams (Tuesta, Giffin, De Sousa Gama, et al, 2003).

Some hospitals and maternity units strive to follow the WHO guidelines regarding humanized childbirth care, which includes encouraging non-surgical delivery, reduction of excessive technological interventions in the delivery process, initiation of early breastfeeding, rooming-in, presence of family and listening to women's experiences.

In 1997, the Brazilian Nurse/Midwife Association found in a survey that 2,756 nurse/midwives there had been trained in the country during the last 20 years. They were not guaranteed work in a labor ward after training completion, which is why they were in need of in-service training if and when they finally were allowed to assist childbirth

From 1998, however, the Brazilian Ministry of Health (MINS) is promoting the idea of using midwives to assist normal childbirth. Funding for courses in obstetric training for nurses is available and payment for normal childbirth assisted by obstetric nurses (nurse/midwives) is included in the payment table of "Sistema Único de Saúde" (SUS).

Childbirth in *Canada* is 100% assisted by skilled attendants, and one of the world's lowest MMR is found in this country (Table 8). According to the Canadian Institute for Health Information (2004), obstetricians assist an increasing number of deliveries (with a 20% cesarean section rate) whereas many family physicians are increasingly excluding deliveries from their core services. The family physicians used to be the main providers of childbirth care, and have still approximately 30-40% of the "market". Government-sanctioned midwifery prior to 1991 was limited to isolated frontier and outpost regions of Canada (Plummer, 2000). However, the number of childbirths attended to by midwives is slowly increasing. The figures vary from province to province, though, as each province independently handles health services, including maternal health care.

Midwifery was first legislated and regulated in Ontario in 1991 (Plummer, 2000) and Ottawa followed suit in 1992 (McKendry and Langford (2001). Since then, a majority of the provinces have midwifery legislations except for Prince Edward Island and Yukon. However, so far Canada has only 400 midwives nationwide. Some of the new midwifery legislation in Canada also include Aboriginal (traditional) midwifery, whose revival has not been an easy task. Many ancient practices have been lost, and there are few midwives to pass on traditions. However, some emerging forms of Aboriginal midwifery indicate that attempts are made to blend traditional with modern midwifery (Carrol and Benoit, 2001).

The Canadian midwives practice autonomous midwifery, i.e. no physician is involved in low-risk pregnancies and childbirths. In some provinces the midwives have hospital privileges, which means they can accompany their client to the hospital and assist childbirth there. The midwifery education is a direct entry, four-year university degree program of which one and a half years is basic social and physical sciences and the remaining one and a half years is midwifery. Canadian midwives are not involved in family planning. Most midwives have their own clinics and refer only if pregnancy and labor turn complicated.

In the *Dominican Republic*, 97% of women deliver at the hospital. A review of hospital records indicates that general physicians conducted more than 62% of the deliveries, obstetricians around 30% and nurses assisted 4% of the childbirths. The cesarean section rate was average at 27.5% (Miller et al, 2003). There are no professional midwives in The Dominican Republic; non-registered traditional midwives apparently attend childbirth in domestic settings.

The MMR figures are not consistent, according to PAHO (2003); it is 69/100,000 whereas Demographic Household Survey data from 1996 said it was close to 229/100,000. In case the former is true, there has been a tremendous change in quality of care, probably due to the assessment made by Miller et al (2003) who published a study in 2003 called the paradox of the Dominican Republic. The study raised the question why so many women died when skilled health personnel attended institutional deliveries. Huge deficiencies in quality of care were reported, the nurses, for example, were often required to solve problems through telephone contact with the physicians.

In *Uruguay*, almost all births (99%) occur in a hospital, and certified by a physician or university-trained midwife. Uruguay, however, has a tremendous amount of physicians (3.7/1000 population) compared to nurses (0.7/1000 population), which indicates that physicians attend to the majority of childbirths. According to statistics, Uruguay has a low MMR, 20.1/100,000 live births. It is believed, though, that there is significant underreporting of maternal mortality (PAHO, 1998).

In the *United States of America*, close to 99% of all deliveries take place within a hospital setting and the physicians (mostly obstetricians) attend to about 90% (ACNM, 2004, Curtis, 1999). The discourse around childbirth centers on 'managing risk' from an obstetrical point of view. According to Davis-Floyd (2003), the physicians view childbirth as a potential disaster that must be managed with authority in order to produce the best possible outcome. The intervention rates are quite high (Curtis, 1999), however, it is interesting to note that the cesarean section rate is decreasing (from 22.8 to 20.8% respectively) and that the number of vaginal births after previous caesarean section has increased by more than 8% (from 1.9 to 27.4%). The number of forceps has reduced from 7.1 to 3.6% whereas vacuum extractions have increased from 4.5 to 7.8%. Statistics from the National Hospital Discharge Survey (NHDS) indicate that the percentage of episiotomies is rather high, even if it has decreased by 14% from 1986-89, 57 vs. 43% respectively. There has also been a steady rise in the use of electronic fetal monitoring, ultrasound, induction and stimulation of birth both among physicians and midwives of all categories (Curtis, 1999).

The number of births attended by certified nurse-midwives (CNMs) has more than doubled in the United States, from 4.5-10% respectively during the last decade (ACNM, 2002). Approximately 0.5% of deliveries are conducted in home settings and another 0.5% take place in birthing centers, of which the country in 1999 had 160 in operation (Stone, 2000). This indicates that a majority of the midwives operate within hospital settings and probably with physicians. Paine, Dower & O'Neil (1999) argue the necessity of integrating the midwifery model into the health system, making it available for all women in order to meet the country's health needs. It is also essential to educate the women so they can make informed choices in relation to childbirth care.

Whereas some states continue to have extremely few (<3%) midwifery led deliveries, other states such as Georgia, New Hampshire and Vermont have more than 20% midwifery led deliveries. New Mexico has more deliveries attended by midwives than any other state, 34.5% (ACNM, 2004).

There is, however, reason to believe that the numbers are considerably higher. A membership survey conducted by ACNM found that 6% of all midwives reported that the birth certificates of babies whose birth they had assisted did not show the midwife as the attendant (Curtis, 1999). Also, the trend towards midwifery led deliveries has steadily been increasing over the last decade and appears to continue increasing in the first decade of the 21st century (ACNM, 2004).

Stone (2000) presents in her article “The evolving scope of nurse-midwifery practice in the United States” a thorough description and analysis of the historic background of midwifery in USA. Lay midwives attended at the beginning of the 20th century more than 50% of all deliveries. The high MMR and IMR was attributed to mal-practices by these cadres, and the concept nurse-midwives was introduced by physicians and nurses who were concerned with the problem of inadequate maternal and neonatal health care. The first successful effort to establish such a service occurred in a remote rural area in Kentucky in 1925 (Stone 2000). The first nurse-midwifery school was established in 1931 (The Lobenstine Midwifery Clinic). Today there are 46 ACNM-accredited programs for educating nurse-midwives and eight accredited programs for educating direct-entry midwives (Paine et al, 1999).

ACNM has developed core competencies for basic midwifery practice and the latest edition of these were adopted in May 2002. These competencies describe the fundamental knowledge, skills and behaviors expected of a midwife and serve as guidelines for educators, students, health care professionals, consumers, employers and policy makers. They furthermore constitute the basic requisites for graduates of all accredited/preaccredited nurse-midwifery and midwifery education programs (ACNM, 2002)

In *Puerto Rico* a nurse/midwifery program (enfermera partera) was started in 1998, which is accredited by the American College of Nurse-Midwives (ACNM) and the midwives are supposed to care for the woman during pregnancy and childbirth in a team model (Document from the Nurse Midwifery Education Program, ICM, 2004).

The cesarean section rate is approximately 30%. The rates are, as often seen, much higher in private hospitals, 46.5%. Variations are found throughout the island, though, and the lowest rates were found among women with the highest risks (Vázquez-Calzada, 1997).

Venezuela has a ratio of three physicians to one nurse, and it is, therefore, probably safe to assume, despite lack of reliable information, that the majority of skilled attendance at birth, which is 95%, is provided by physicians (PAHO, 1998).

3.5 MODEL V. INSTITUTIONAL OBSTETRIC CARE WITHOUT PROFESSIONAL MIDWIFERY

This model is characterized by a system where no professional midwives or nurse/midwives are trained. The physicians and/or obstetricians are responsible for all deliveries and are assisted either by auxiliary nurses or nurses with no formal training in midwifery services.

Table 9. Characteristics of countries categorized under Model IV

	Tot.Pop (mill)	Economic status	Female literacy	TFR	MMR/* 100,000	IMR/** 1,000	Attendance at Birth
Colombia	44,222	LMIC	92.5%	2.6	91.7	20.4	80% PH, OB, AN 20% NCTM
Cuba	11,300	LMIC		1.6	33.9	6.5	100% PH, OB, N.

Source: PAHO (2003), UNDP (2003)

Abbreviations: AN = auxiliary nurse, NCTM = non-certified traditional midwives

* Maternal Mortality Rate, Deaths/100,000 live births

** Infant Mortality Rate, Deaths/1,000 live births

Colombia has the double amount of physicians in relation to nurses. Colombia does not train midwives and younger physicians assist most low-risk deliveries. Auxiliary nurses assist the physicians during labor and delivery and may if need arise also attend low-risk deliveries. According to information, nurses supervise the auxiliary nurses, but none of these are specifically trained in midwifery. Auxiliary nurses receive women in labor and conduct the initial examination and assess their condition (Bech Larsen, 2004).

The cesarean section rate is approximately 10 %. Other instrumental deliveries are performed using a spatula; neither forceps nor vacuum extractions are applied. Quite a few deliveries are induced by application of vaginal cytotec, often as a result of the family's wish for the baby to be born on a specific day (Bech Larsen, 2004).

Colombia has traditional midwives, however, these are not registered or trained within the official health services. There is apparently no control on how many are delivered by these traditional midwives. Some estimations indicate that about 80% of deliveries are institutional in the cities, whereas in rural areas, > 50% of deliveries take place at home, often without any assistance at all (Bech Larsen, 2004).

Academic training for nursing professionals is conducted at the higher education level, in officially recognized schools of nursing or institutes. The minimum requirement for nursing curricula or degree programs is 8 semesters (four academic years), although some programs have a curriculum of five academic years.

Cuba has for several decades emphasized maternal and infant health and managed to reduce IMR from 91 to 6.4/1000 live births (1999) and maternal mortality nationwide is 31.7/100,000 live births (Moliner et al, 2001). One part of the success depends on the maternity homes (209), which are situated in every municipality and where around-the-clock nurses care for high-risk pregnancies until it is time for hospital delivery (Renz, 2002).

Almost all mothers give birth in an institution, and the primary care provider is the physician. Cuba does not presently train midwives.

DISCUSSION

1. METHODOLOGICAL ISSUES

Two independent researchers conducted the literature search with less than 5% variations, indicating high interreliability. Various search engines were used, but much of the information extracted from one source would appear in another as well, in particular those identified from Pubmed and Popline.

A limitation of this study is the low percentage of material extracted from the research engines (3.5%). In addition, however, numerous reports and websites were consulted. It was, though, quite frustrating to encounter the rather large disparities between different statistical sources, such as PAHO, CIA World Fact Book (2003) and WHO. It was furthermore difficult to find quality articles in any of the three languages used (English, Spanish and Portuguese), in particular related to professional midwifery. The majority of articles identified from the different regions in South America related to traditional midwifery and were mainly written by anthropologists. Except for the USA, where extensive research has been done on outcome of midwifery led childbirth compared to that of obstetricians, we found that even research articles focused on traditional midwifery (Jenkins, 2002, Hunt, 2002, Gleit, 2003, Gleit, 2000).

Skilled attendant/attendance hardly surfaced during the literature search, which is not surprising as it is fairly new terminology.

As for the Caribbean, personal information led to the understanding that oral tradition is still prevailing, which is a valid reason for not being able to identify satisfying material (Hewitt, 2004).

Literature related to nurse/midwifery education has also been scarce, in many cases completely lacking, which is why some countries have not received an adequate and or correct description of the actual situation. Much of the literature encountered is old, recent material, i.e. 1999-2004 is extremely limited.

There is always the possibility that valuable material has been overlooked, and that search terms have not been all inclusive. The authors are therefore open to constructive critique and suggestions in order to improve the quality and accuracy of the report.

Due to the fact that so many countries in the Americas do not promote midwifery models of care, and because WHO presently refers to the skilled attendant as a health professional possessing “midwifery skills”, the most feasible manner to treat the information appeared to categorize the countries according to the predominant prevailing system of maternal health care. There are overlapping features in the models, though. In the case of Peru, for example, well-developed professional midwifery and obstetric team (Model III, Table 4) co-exist with extensive traditional midwifery. However, in order to achieve some kind of systematization, countries were assigned to a model even if it might be argued that it fits into several other models.

The terminology ‘midwifery’ has been applied to all models whether it describes nurse/midwifery or direct entry midwifery; the only distinction made is between professional and traditional. Obstetric care was chosen to describe the physician-dominated models and include

medicalization but also the more family oriented “midwifery” type of care offered by physicians from Canada and Cuba.

The terminology ‘traditional birth attendant’ (TBA) has been consequently substituted with the concept ‘traditional midwife’ (TM). This has partly been done due to the fact that the most common terminology applied in the literature is *partera* and *partera tradicionales*, which is equivalent to midwife and traditional midwife. Another reason is the criticism encountered during the literature review directed towards the labeling of a cadre, which honor the true meaning of the concept midwife i.e. ‘being with the woman’. Finally, the ICM congress in Trinidad & Tobago (2004) integrated midwives of all categories, an act that shows the way forward.

2. MATERNAL AND NEONATAL OUTCOME OF CHILDBIRTH RELATED TO MODEL OF CARE

An essential aspect to consider when discussing the models in relation to childbirth outcome is the fact that there are huge differences between the southern and northern parts of the Americas. Canada and the USA fall in a category of their own, with MMRs of 9.9 vs. 2.4/100,000 respectively, indicating highly qualified and qualitative care. However, the USA in particular, faces problems related to expensive lawsuits, which are serious obstacles for both obstetric and midwifery models of care (Dawley, 2000, ACNM, 2002). Even if the countries have been referred to one of the models (IV, Table 8), the discussion related to outcome vs. model therefore primarily refers to countries, which are struggling to achieve safer motherhood.

Cautiousness is needed when attempting to analyse available statistical information in relation to what type of model each country chose or, as in some cases, are obliged to use. The MMR is not a very reliable indicator to use, as large samples are needed in order to statistically secure a correct result. In countries with small populations and few maternal deaths, such as St Kitts and Nevis in the Caribbean region, the MMR turns out to be comparatively high. Moreover, it is generally accepted that there is extensive sub registration of maternal deaths, not only in countries where record keeping is inadequate, but also in countries with an efficient register system (De Brouwere & Lerberghe, 2001).

Considering these facts, there are still no doubts that Model I & II, where traditional midwifery is a major part of childbirth care, present higher maternal mortality rates than other models (Table 2 and 3), a finding which is consistent with Koblinsky (2002) who also deduce that homebirth with unskilled care is associated with high maternal mortality. Traditional midwifery, however, plays an important role in several South American countries. According to anthropologists, women adhere to traditions and are reluctant to seek professional care even when it is available. In Guatemala and Honduras, for example, it has become quite common to combine the two forms of care. In some areas, the traditional midwives charged substantially more for their services than the public health services did. This did nevertheless not prevent women from seeking their assistance. Other information indicate that women could not afford to pay for private care and therefore choose the one closest to them as public health care was viewed with suspicion.

Another factor favoring the continuity of traditional midwifery is the slow development of rural areas in a majority of the countries studied. Many health professionals are reluctant to move from urban areas due to family responsibilities and abilities to develop a career. This was a major reason for understaffed maternal health care services in Nicaragua (Pettersson et al, 2002) and is probably not unique for this country.

Despite the importance of traditional midwives during childbirth a) providing cultural sensitive care b) being the link between the community and the health system c) registering all pregnant women d) encouraging women to seek skilled care and e) accompanying woman who seek

professional care at birth, it is essential to remember that this cadre is not recognized as a skilled attendant (WHO definition) and can therefore not be instrumental in reducing maternal and neonatal mortality, which has been demonstrated in various parts of the world (De Brouwere & Lerberghe, 2001). One might, though, turn the question around and ask: what would the rates of maternal mortality be without the presence of traditional midwifery and the countries' inability to provide services to distant located and vulnerable populations?

Model I and II are considered an option in case a functional referral system is available. This has, according to Koblinsky (2002), been pursued by Sri Lanka and Malaysia where MMR has been reduced to < 100/100 000 live births.

The model presenting the lowest rates of maternal mortality is Model III, where professional midwifery is well developed. Chile, Costa Rica, Saint Lucia and Trinidad Tobago have all < 50/MMR/100,000 live births, and Chile, which has the lowest rate (22.3/100,000) is interestingly enough the country that managed to develop both institutional and community professional midwifery. Chile's experience thus appears to replicate the experience of countries such as Sweden (Högberg, 1985, Andersson, 2000) and Holland (Schuitemacher et al, 1991) and contemporary successes such as Thailand and Sri Lanka (De Brouwere & Lerberghe, 2001).

It is therefore intriguing that in countries where professional midwifery used to be well developed and held in high esteem, such as Argentina and Mexico, have moved towards a physician based model. The reason for this could not be deduced by this literature review. It might of course be due to a genuine belief that physicians are the best providers of maternal health care, and that childbirth should be considered a condition, which needs highly specialized medical attention. However, it is also common knowledge that obstetrics is regarded as a lucrative business, which may be tempting to systematize. In order to fully understand the rationale behind this manner of reasoning, it would be necessary to conduct an in-depth study. What appears to be clear, though, is that medicalized care tends to marginalize poor and vulnerable populations and also maintains traditional midwifery. This was clearly demonstrated in Nicaragua where the "gap of care" between traditional midwives and institutionalized obstetric care became evident (Pettersson et al, 2002).

Model IV (Table 8) and V (Table 9), the physician dominated models, are characterized by extremely high rates of cesarean section rates. It has been established in research that this intervention is associated with higher death rates among women in labor, which in turn is not only connected to complicated labors (De Brouwere & Lerberghe, 2001). It seems, therefore, reasonable to discuss not only the harmful effects of traditional methods but also of medicalized childbirth care. One might also wonder on which grounds this rather unfortunate development has been allowed to continue. One important reason might be the increasing privatization of care, which in Brazil for example, presents rates of cesarean sections that are close to 90%. Being the only or one of few obstetricians responsible for a number of women, it might be the most feasible manner to schedule birth by elective surgery. Private care is also associated with high income, which might yet be another driving force (Murray, 2000). The fact is that these models create inequality and inequity of care within a country, which according to PAHO (2003) is exemplified by the high rates of cesarean sections in urban areas compared to the low rates found in rural areas. Bruga and Pritze-Aliassime (2003) moreover clearly demonstrates how attendance by physicians increased simultaneously with the socio-economic status of women.

In model IV, the physician dominated and medicalized model, two countries have exceptionally high rates of maternal mortality, Barbados and the Dominican Republic. In the former case, it might be related to the fact that few maternal deaths among few births will statistically show an increase in MMR. In the Dominican Republic however, the rates given by PAHO (2003) are low compared to rates described by Miller et al (2003), which ranges from 110-229/100,000 live births. In their study a graphic model (p. 92) depicts how the Dominican Republic falls outside the axiom of

increased coverage of skilled assistance (in percentage) in correlation with reduced MMR. With coverage close to 90%, the Dominican Republic's MMR is higher than Guatemala's (Model I, Table 2) and Ecuador's and El Salvador's (Model II, Table 3). The researchers' conclusion to this paradox was substandard care found on all levels (Miller et al, 2003). Koblinsky (2002) who refers to a model labeled 'CEOC', i.e. comprehensive emergency obstetric care, likewise found that maternal mortality might remain high despite care from professionals, in particular where the quality of care is low.

In the case of the Dominican Republic, it is interesting to notice that no professional midwives are trained and that general nurses at times are delegated responsibilities for which they have no formal education.

The infant mortality rates (IMR) followed the same trends in relation to the identified models as the MMR did. Haiti (Table 1) presented the highest rate (80.3/1000 live births). The lowest rates were found in Model III (Table 4). Except for Guyana (54/1000) and Peru (33.4/1000), the remaining countries presented rates below 23/1000 live births. It is noticeable that in both Guyana and Peru, traditional midwives were mentioned as caretakers. The intriguing fact, though, is that Peru, where TM's cared for about 40% of deliveries, had lower IMR than Guyana where reportedly only 5% of deliveries were attended to by TM's.

Substandard care during childbirth is probably not unique for the Dominican Republic. Many countries struggle with insufficient staff. Low salaries within the public health system, for example, forced nurses and physicians in Nicaragua, for example, to seek more than one job (Pettersson et al, 2002). It is also clear from the literature review that Ministries of Health do not or cannot provide a conducive environment, which is essential for the promotion of safer motherhood, in particular during childbirth (UNFPA, 2003, MNPI, 2003).

According to WHO (WHD.98.8) the key determinants of quality care include technical competence of providers, interpersonal skills, availability of basic supplies and equipment, physical facilities and infrastructure, linkages to other health services and a functional referral system. Important as these components may be, services must also be available, accessible and acceptable in order to be utilized. What constitutes quality of care is regarded as context specific and may vary from place to place and even from individual to individual (AbouZahr, Vlassof & Kumar, 1996). In relation to childbirth, quality of care is also a significant event influenced by social norms and expectations of the individual woman, the family and the community (Maimbolwa, 2004, Pettersson, 2004).

Studies related to quality of care from settings struggling with high MMR indicate severe deficiencies in all of the determinants mentioned (De Brouwere & Lerberghe, 2001). Barriers to quality of care, however, are to a great extent lack of stewardship of finances as well as a falling trend in health care expenditure (Kwast, 1998). According to PAHO's regional strategy for reduction of maternal morbidity and mortality (2002), the low rate of cesarean sections in rural areas (whereas WHO recommend an overall rate of 15%) is an indication of low quality care. Moreover, the routine use of episiotomies applied in Argentina and Uruguay (9 of 10 women) must also be regarded as substandard care.

When presenting the various models, female literacy has been taken into consideration. As would be expected, it is lowest in Model I (Table 2), which corresponds to evidence throughout the world discussed by De Brouwere & Lerberghe (2001). Education is regarded as a key factor in the fight to reduce maternal mortality, however, it is essential that the quality of care provided is good. In an opposing case, the scenario presented for Bolivia (Table 3) reports a high rate of female literacy and a high MMR. In Bolivia's case it is probably related to the fact that about 40% of deliveries are attended to by traditional midwives, unless the reported literacy rate is too high.

The economic status of the countries according to the World Bank income group classification (UNFPA, 2003) has also been indicated in the models. In accordance with other indicators, Model I

(Table 2) most clearly show how high MMR appears to be associated with identification as a low-income status country.

The pure midwifery model of care, which builds on social, physical and psychological support of the woman and working in team with her during pregnancy and childbirth, is primarily discussed in the Canadian, American and Chilean settings but also to a certain extent in the Caribbean countries and Puerto Rico, which by the way has provided the only document available on education of professional midwifery. It appears, both from personal experience and research, that the pure model of midwifery care is mostly found in countries that can afford an individual approach to childbirth assistance. Midwives that tamper with ‘the conveyer belt’ situation (Pettersson, 2004) in labor rooms, i.e. simultaneous deliveries and only one midwife in attendance (Miller 2003) need our sympathy and understanding for the inability to provide individualized and empathic care. On the other hand, in order to convince women to approach skilled services whenever available, it is essential that professional midwives consider how stressful and negative attitudes impact the women when choosing birth location and birth assistance. Reduction of maternal mortality is linked to women’s care seeking behavior, which in turn is linked to how they are treated by the health professionals. With simple measures, professional midwives might become the key in the endeavor to provide humanized maternal care, which appears to be the common goal for all of the Americas.

It is unclear if and how the new concept “skilled attendant” will affect the role of the professional midwife. It might turn out to be a positive move as more health professionals can be included in maternal health care services. It seems essential, though, that the existing discourse between nurse/midwifery and direct entry midwifery found in Brazil and Jamaica, should be discontinued. It might otherwise be extremely difficult to adapt to the collaboration with yet other professionals claiming their right to be part of the obstetric team or midwifery.

CONCLUSIONS

- Maternal and perinatal mortality in the Americas is lower compared to other regions of the world, in particular the African region
- The highest maternal and perinatal mortality rates are found in countries where the percentage of skilled attendance during birth is lowest.
- Much effort is invested in maternal health care in the Americas, but in general, professional midwifery is underdeveloped in all regions except for the non-Latin Caribbean.
- Traditional midwifery is widespread and will continue to play an important role in several countries in the near future.
- Childbirth care where professional midwifery is absent, is mostly dominated by physician and highly medicalized with high rates of caesarean sections.
- High percentage of skilled attendance at birth does not automatically vouch for reduction of maternal and perinatal mortality, substandard institutional care constitutes an important risk factor.
- Medicalized maternal care appears to create inequality in access to care among groups of a population.
- The five models of childbirth care should not be considered as mutually exclusive.

RECOMMENDATIONS

- In order to give valid and sustainable recommendations, it is essential that the questionnaire study be completed. This will hopefully give a comprehensive description of each country's situation and assist the researchers in identifying areas where further data collection is required, such as distribution of services, midwifery practices and midwifery education
- Likewise, the planned case studies should be conducted, as these will provide in-depth knowledge about "prototype" countries that might be used to demonstrate the constraints and/or the possibilities of the five models identified in this study. The case study will also provide the view of the main stakeholders in maternal health care, the woman and her family. It is essential to know why and how women seek/ do not seek care
- It is recommended, though, that the Ministries of Health in various countries consider the historical and contemporary evidence indicating that generalized institutional and community professional midwifery is the main key to normalize, humanize and improve maternal and perinatal health.
- It is generally believed that educating midwives is cheaper than educating physicians, and it might be of interest for countries that have adopted the physician-dominated and intervention rich model to reconsider this if it can be shown that MMR can be reduced at a lower cost. It is therefore essential to include an economist in a future research team in order to look at the cost of skilled attendance.
- Traditional midwifery should not be replaced before skilled care is available. On the contrary, collaboration between traditional and professional midwives should be promoted in order to encourage women to seek professional care during childbirth.
- In light of the evidence that caesarean sections are associated with higher maternal mortality, it seems essential that constructive discussions be initiated between the ministries of health and the physicians/obstetricians to establish the motives behind a practice, which must be considered substandard. Personal gains should not be allowed to guide standards of care, which even appears to create inequality among groups of population

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ANNEXES

ANNEX 1

Profile of Midwifery Services in the Americas

Information about midwifery services in each country will be used to orient PAHO's future support to countries to enhance the contribution of midwifery services to maternal and infant health and well being. It is developed considering the World Health Organization (WHO) Initiative on Mapping of Midwifery Services and will contribute to that effort as well. It will complement other work in the Region being developed to address the Millennium Development Goal on skilled attendance at birth.

This baseline information is part of a larger effort which will include in depth profiles or case studies in selected countries which reflect the various situations in the Region with regard to midwifery services. Details will be available on request. This process is expected to be completed by June 30, 2005.

Working with key nursing and midwifery stakeholders and partners in the Region, the Unit of Health Services Organization (THS/OS) of the Pan American Health Organization (PAHO), will organize and analyze basic information from all countries together with the comprehensive analysis in selected countries. Stakeholders and partners include University of West Indies, Association of Faculties and Schools of Nursing in Latin America, International Confederation of Midwives (Regional), WHO Collaborating Centers for Nursing and Midwifery. Case study protocol is available on request. Information collected by stakeholders will be submitted for review by country authorities prior to use in the Regional analysis

For purposes of this project midwifery services refer to those services provided by non physician providers during the pregnancy, childbirth and postpartum period to the mother/infant dyad. The care also includes preventive measures such as health counselling/ education and extends to certain areas of gynaecology, family planning and child care. Non-physician providers include nurse/midwives, midwives, nurses, and auxiliary personnel. Services provided by traditional midwives are covered in a separate section of this questionnaire.

COUNTRY

Information is at the national level. Sub unit level information will be analyzed for selected countries. Most recent information is to be used. Year and source should be indicated.

SECTION A

DEMOGRAPHIC AND OTHER BASIC INDICATORS

	Year/Source of data	
1. Total population (*1)		
2. Place of residence (*8)		Rural % Urban %
3. Gross national income per capita (*13B) (purchasing power parity value)		
4. Government Health Expenditure of gross domestic product (* 51)		
5. Unemployment rate (%)		
6. Literacy rate (*11)		Female % Male %
7. Crude birth rate/1,000 pop (*2)		
8. Crude death rate/1,000 pop (*4)		
9. Annual population growth/1,000 (*6)		
10. Life Expectancy at birth (*10)		Female 33 yrs Male yrs
11. Total Fertility rate (*7)		
12. Number of births per year (*3)		
13. Life time risk of Maternal Mortality Rate (1: #)		
14. Maternal mortality ratio/100,000 live births (*19) Main Causes (3-5) • • • • •		

	Year/Source of data	
15. WHO estimates of Maternal Mortality Rate		Country
16. Infant Mortality Rate/1,000 (*20)		Country
17. Incidence of Congenital Syphilis (#new cases/# total live births)		
18. General HIV prevalence (%) _____		Country
<ul style="list-style-type: none"> • AIDS annual incidence rate/1,000,000 (*43) • Male Female ratio of AIDS case (*44) 		<ul style="list-style-type: none"> • . • .
19. Number of nurses/10,000 population (*47)		Indicate # of professional, technical and/or auxiliary nurses
20. Number of qualified midwives/10,000 population (excluding traditional midwives)		Indicate # of professional, technical and/or auxiliary midwives and/or nurse midwives
21. Number of physicians/10,000 population (*46)		

(*) Available through PAHO's Basic Indicators

Comments or additional information which highlight issues important in the country including additional indicators, trends and adds to an understanding of the context in which midwifery services are delivered. Add additional pages as needed.

SECTION B

NATIONAL MATERNAL HEALTH CARE SERVICES

Maternal Health Care (MHC) Services available nationally (include urban/rural differences if available and utilization of MHC Services. Also provide year and source of data). Categories of health facilities will vary among countries. Substitute categories according to country designations.

	Year/Source of data	National	Rural	Urban
1. Number of Hospitals performing Comprehensive Emergency Obstetric Care (CEOC) <ul style="list-style-type: none"> • # of caesarean sections/year • # of forceps deliveries/year • # of vacuum extractions/year 	<ul style="list-style-type: none"> • . • . • . 	<ul style="list-style-type: none"> • . • . • . 	<ul style="list-style-type: none"> • . • . • . 	<ul style="list-style-type: none"> • . • . • .
2. Number of Maternity Units (in stand alone facilities or general hospitals) offering Basic Emergency Obstetric Care (BEOC)				
3. Number of Health Centres with beds for deliveries				
4. Number of Health Posts providing midwifery services (indicate what type of services)				
5. Percentage of women covered by ante-natal care services (%) (*52)				
6. Percentage of antenatal care services provided by a non-physician (%)				
7. Average ante-natal care visits per woman (#) <ul style="list-style-type: none"> • Women starting ante-natal care in the 1st trimester (%) • Women tested for HIV (%) • Women receiving tetanus vaccination (%) • Women tested for syphilis (%) 	<ul style="list-style-type: none"> • . • . • . • . 	<ul style="list-style-type: none"> • . • . • . • . 	<ul style="list-style-type: none"> • . • . • . • . 	<ul style="list-style-type: none"> • . • . • . • .
8. Percentage of Institutional Deliveries (%)				
9. Percentage of Home Deliveries (%)				
10. Percentage of deliveries attended by a non-physician (%)				

	Year/Source of data	National	Rural	Urban
11. Percentage of episiotomies performed: a. primipara b. multipara	• . • .			
12. Postpartum care available Yes <input type="checkbox"/> No <input type="checkbox"/> (within 6 weeks)				
13. If yes, percentage of women receiving postpartum care (%)				
14. Percentage of postpartum visits provided by a non-physician (%)				
15. Percentage of women covered by Family planning services (%) • Percentage of women who use contraceptives (%) (*58)				
16. Percentage of family planning visits provided by a non-physician (%)				
17. Abortion care available Yes <input type="checkbox"/> No <input type="checkbox"/>				
18. Payment for Services • Free of charge Yes <input type="checkbox"/> No <input type="checkbox"/> • Formal User-fees Yes <input type="checkbox"/> No <input type="checkbox"/> • Informal User-fees Yes <input type="checkbox"/> No <input type="checkbox"/>	• . • . • .			
Other System				

Comments or additional information which highlight issues important in the country including additional indicators, trends and adds to an understanding of the context in which midwifery services are delivered. Add additional pages as needed.

SECTION C

PROVISION OF MATERNAL HEALTH SERVICES

This section provides information on scopes of practice for the various categories of providers of maternal health services. The information should reflect the most common situation or main provider as well as the number of different possibilities considering the existing policies on scopes of practice. Indicate if providers vary in rural versus urban settings or in private versus public settings or indicate if information provided refers only to the public sector. Add categories if the country has a special category of worker involved in the delivery of these services. This section refers to the category in the health service and not to the educational program which prepares the individual.

Provision of Maternal Health Services	Health Personnel Category Midwifery (M); Nurse (N); Auxiliary Nurse (AN); Nurse Midwife (NM); Obstetric Nurse (ON); Auxiliary Nurse/Midwife (ANM); Medical Students (MS); General Practitioner (GP); Obstetrician (OB); Pediatrician (P); Neonatologist (N); Community Nurse (CN); Nurse Practitioner (NP); Pupil Midwife (PM); Other _____
Type and Place of Antenatal Care	Capital Letter/s (As many as apply)
1. Low-risk Pregnancy <ul style="list-style-type: none"> ▪ Health Centre ▪ Hospital 	<ul style="list-style-type: none"> ▪ . ▪ .
2. High-risk Pregnancy <ul style="list-style-type: none"> ▪ Health Centre ▪ Hospital 	<ul style="list-style-type: none"> ▪ . ▪ .
Type and Place of Delivery	
1. Low-risk delivery at a Referral Hospital with Comprehensive Emergency Obstetric Care (CEOC) <ul style="list-style-type: none"> ▪ Monitoring of labour ▪ Assisting others with delivery ▪ Conducting delivery ▪ Supervising delivery 	<ul style="list-style-type: none"> ▪ . ▪ . ▪ . ▪ .
2. Complicated delivery at a Referral Hospital with CEOC <ul style="list-style-type: none"> ▪ Monitoring of labour ▪ Assisting others with delivery <i>Specific Situations:</i> <ul style="list-style-type: none"> ▪ Episiotomy ▪ Repair of episiotomy ▪ Administration of Oxytocin ▪ Breech ▪ Twins ▪ Retained Placenta 	<ul style="list-style-type: none"> ▪ .

<p>3. Low-risk delivery at Maternity Unit of General Hospital offering Basic Emergency Obstetric Care (BEOC)</p> <ul style="list-style-type: none"> ▪ Monitoring of labour ▪ Assisting others with delivery ▪ Conducting delivery ▪ Supervising delivery 	<ul style="list-style-type: none"> ▪ . ▪ . ▪ . ▪ .
<p>4. Complicated delivery at Maternity Unit offering Basic Emergency Obstetric Care (BEOC)</p> <ul style="list-style-type: none"> ▪ Monitoring of labour ▪ Assisting others with delivery ▪ Diagnosing and referring complications <p><i>Specific Situations:</i></p> <ul style="list-style-type: none"> ▪ Episiotomy ▪ Repair of episiotomy ▪ Administration of Oxytocin ▪ Breech ▪ Twins ▪ Retained Placenta 	<ul style="list-style-type: none"> ▪ .
<p>5. Low-risk delivery at Health Centre</p> <ul style="list-style-type: none"> ▪ Monitoring labour ▪ Assisting others with delivery ▪ Conducting delivery ▪ Diagnosing and referring complications <p><i>Specific Situations:</i></p> <ul style="list-style-type: none"> ▪ Episiotomy ▪ Repair of episiotomy ▪ Administration of Oxytocin ▪ Retained Placenta 	<ul style="list-style-type: none"> ▪ .
<p>6. Home Delivery</p>	
<p>Type and Place of Neonatal Care</p>	
<p>1. Normal Newborn</p> <ul style="list-style-type: none"> ▪ Health Centre ▪ Hospital 	<ul style="list-style-type: none"> ▪ . ▪ .
<p>2. Newborn who requires resuscitation</p> <ul style="list-style-type: none"> ▪ Health Centre ▪ Hospital 	<ul style="list-style-type: none"> ▪ . ▪ .

Type and Place of Postpartum Care (within 6 wks)									
1. Normal <ul style="list-style-type: none"> ▪ Health Centre ▪ Hospital 	. ▪ . ▪ .								
2. Complicated <ul style="list-style-type: none"> ▪ Health Centre ▪ Hospital 	. ▪ . ▪ .								
Type and Place of Family Planning									
1. Health Centre/Hospital <ul style="list-style-type: none"> • Pills • IUD • Injections 	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center;">Health Centre</td> <td style="width: 50%; text-align: center;">Hospital</td> </tr> <tr> <td style="text-align: center;">• .</td> <td style="text-align: center;">.</td> </tr> <tr> <td style="text-align: center;">• .</td> <td style="text-align: center;">.</td> </tr> <tr> <td style="text-align: center;">•</td> <td style="text-align: center;">.</td> </tr> </table>	Health Centre	Hospital	• .	.	• .	.	•	.
Health Centre	Hospital								
• .	.								
• .	.								
•	.								
2. Complicated <ul style="list-style-type: none"> ▪ Health Centre ▪ Hospital 	.								

Are maternal and neonatal death audits conducted at:

	Yes	No	% deaths
▪ Hospitals who provide Comprehensive Essential Obstetric Care	<input type="checkbox"/>	<input type="checkbox"/>	_____
▪ Hospitals who provide Basic Emergency Obstetric Care	<input type="checkbox"/>	<input type="checkbox"/>	_____
▪ Other facilities	<input type="checkbox"/>	<input type="checkbox"/>	_____

SECTION D

TRADITIONAL MIDWIVES

This section is intended to provide information on the extent to which traditional birth attendants (TBA)/ traditional midwives provide services in the country.

- 1. Deliveries by all TBA (#/%) _____ Year and source _____
- 2. Officially trained (#) _____
- 3. Length of training (weeks/months) _____
- 4. Trained by: (Ministry of Health, UNICEF, others?) _____
- 5. Delivery by TBA registered: Yes No
- 6. Numbers/year (#) _____

7. Services Provided by TBA/ Trained TBA

8. Provide additional information as appropriate regarding the following:
How are TBA services paid for? What support (supplies, etc.) are provided to Trained TBAs? Who provides supervision of Trained TBAs? What is legal status for delivery by a TBA? How are referrals made from TBAs to the official system? Are there instances where TBAs are providing services in public facilities? Please explain.

SECTION E

NURSE/MIDWIFE EDUCATION

This section provides information on formal educational or training programs leading to a certificate, license or other mechanism which qualifies the individual for a specific scope of practice. If the program existed in the past but does not currently exist, indicate the last year when the program was offered. Provide additional information at the end of the section.

Nurse/Midwife Education	# Programs	Duration Yrs/Months	Teachers Nurse/Midwives (N/M) Nurses (N), Physicians (P), Others (O, Specify)
1. Specialty prepared Maternal Health Nurse but not midwife (SMI/Saúde Materno Infantil)			
2. Nurse/Midwife: Regular nurse with post-graduation course in midwifery (NM)			
3. Direct Entry Midwife (DEM)			
4. Nurse/Midwife with Advanced Education <ul style="list-style-type: none"> ▪ Master ▪ PhD 	<ul style="list-style-type: none"> ▪ . ▪ . 	<ul style="list-style-type: none"> ▪ . ▪ . 	<ul style="list-style-type: none"> ▪ . ▪ .
5. General Nurse with obstetric knowledge (GN)			
6. Auxiliary Nurse/Midwife (AN/M)			
7. Auxiliary Nurse with midwifery knowledge (AN)			
8. Others			

If more than one program exists in the country, are there standards across the different programs? Explain

Entry Requirement for:	Years of basic education	Other Requirements
• Specialty prepared Maternal Health Nurse		
• Nurse/Midwife		
• Direct Entry Midwife		
• MASTER or PhD prepared Nurse/Midwife		
• General Nurse with midwifery knowledge		
• Auxiliary Nurse/Midwife		

• Auxiliary Nurse with midwifery knowledge		
• Other		

Number of providers existing in the country. Provide source and date. Indicate number of new graduates each year

Nurse Providers	Source & date	# new graduates per year
• Specialty prepared Maternal Health Nurse		
• Nurse/Midwife		
• Direct Entry Midwife		
• MASTER or PhD prepared Nurse/Midwife		
• General Nurse with midwifery knowledge		
• Auxiliary Nurse/Midwife		
• Auxiliary Nurse with midwifery knowledge		
• Other		

SECTION F

LEGISLATION OF NURSE/MIDWIFE PRACTICES

This section provides information on the way reproductive health practice is regulated in the country.

1. Is license or formal accreditation/certification needed to provide MHC services for:

- Nurse/Midwives Yes No Not known
- Nurses Yes No Not known
- Auxiliary Nurses Yes No Not known
- Auxiliary Midwife Yes No Not known

2. Do clinical guidelines and/or protocols exist for:

- | | Health Centres | Hospitals |
|---------------------|---|---|
| • Nurse/Midwives | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |
| • Nurses | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |
| • Auxiliary Nurses | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |
| • Auxiliary Midwife | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |

3. Are job descriptions specific for MHC available at:

- | | Health Centres | Hospitals |
|----------------------|---|---|
| • Nurse/Midwives | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |
| • Nurses | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |
| • Auxiliary Nurses | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |
| • Auxiliary Midwives | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |

4. Is supervision of MHC provided for?

Health Centres

Hospitals

- | | | |
|----------------------|---|---|
| • Nurse/Midwives | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |
| • Nurses | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |
| • Auxiliary Nurses | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |
| • Auxiliary Midwives | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> Not known <input type="checkbox"/> |

5. Does protective national legislation exist for practice?

- | | |
|----------------------|--|
| • Nurses | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| • Midwives | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| • Auxiliary Nurses | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| • Auxiliary Midwives | Yes <input type="checkbox"/> No <input type="checkbox"/> |

SECTION G

MIDWIFERY ASSOCIATIONS AND CONTACT INFORMATION

List all midwifery associations in the country. Include associations of specialist nurses who are not midwives and traditional and lay midwife associations. Provide three (3) current members of an association and their contact information - address, phone, facsimile, e-mail and name of person to contact.

- 1.
- 2.
- 3.

Protocol for Selected Case Studies in the Americas

INTRODUCTION

The provision of quality care during childbirth is believed to make the difference between life and death or lifelong maiming for millions of women during childbirth (Koblinsky 1995; Starrs 1997; Kwast 1998). One of the major components is the presence of skilled attendants, that is, physicians, midwives and nurses with midwifery skills (Donnay 2000; Cook 2000). Historical evidence shows that the introduction of competent midwives and good reporting systems proved to be important factors for improving maternal and perinatal health in countries such as Holland and Sweden, who during the 19th century faced similar problems as today's low-income countries (Högberg 1985; Schuitemacher, Gravenhorst et al. 1991; Romlid 1998; Andersson 2000).

Access to skilled care during childbirth is, however, extremely limited in many countries and ranges from 6-86%. The skilled assistance, when available, does not, however, vouch for quality of care. A review of epidemiological data provides quantitative evidence of health care provision, but does not indicate the quality of care offered. Research has indicated, though, that low quality of care negatively influences women's health seeking behavior and causes many women to refrain from institutional care during labor and delivery (Jewkes, Abrahams et al. 1998).

In line with the World Health Organization (WHO's) world wide mapping of maternity services (WHO/ICN/FICO/ICN 2002), in which services provided by nurse/midwives are included as a specific item (WHO 2002), the Pan American Health Organization (PAHO) has decided to undertake similar efforts to delineate midwifery services and practices in the Americas.

Midwifery, both as a specialty of nursing and as a direct entry profession, has made important contributions to maternal and perinatal health in the Americas over the last decade. Several countries have a long history of midwifery and/or nurse-midwifery services, such as Chile, Costa Rica and Uruguay, which is considered to have positively contributed to the reduction of maternal and perinatal morbidity and mortality (Land 2002). Other countries, however, such as Nicaragua, have not included nurses and/or midwives in the childbirth services (Pettersson et al, 2001) but presently approach this as one solution to reduce the elevated maternal mortality ratio (MMR).

A survey to obtain baseline information will be conducted in 38 countries, applying a questionnaire developed by the PAHO team undertaking the study. It is partly based on the questionnaire used by WHO in its effort to map worldwide midwifery services (WHO 2002), and partly on relevant questionnaires and documents provided by PAHO in Washington (PAHO 2001, PAHO 2002, PAHO 2003). According to Camacho et al (2002), review of successful programs yielded four models of providing childbirth care; i) non-professional attendance/ delivery at home, ii) skilled attendant/ delivery at home, iii) skilled attendant/delivery in a Basic Emergency Obstetric Care (BEOC) facility (health center) and iv) skilled attendant delivery in a Comprehensive Emergency

Obstetric Care (CEOC) facility (hospital). A similar study, exploring successful safe motherhood projects in Latin America and Caribbean, will be undertaken by the “Making the Pregnancy Safer” program (Camacho et al, 2003). Whereas this undoubtedly will bring valuable information to this project, it is also considered essential to conduct in-depth studies in selected countries in order to illustrate various aspects, successes as well as failures, of the nurse/midwife services and practices and various models of maternity care. The intention is furthermore to issue recommendations based on the findings.

Case study research has been undertaken across a variety of disciplines. Hamel (1993) traces the origin of modern social science case studies through anthropology and sociology (Creswell 1998). It has also been widely used in psychology (Freud), in medicine (case analysis of a specific disease, of which HIV/Aids is one of the more well-known), in law (case law) and in political science (case reports) (Creswell 1993).

METHODOLOGY

DEFINITION OF A CASE STUDY

The case study design involves an intensive exploration of a single unit of study; a person, a family a group a community, or an institution (Burns and Grove 1993). According to Creswell (1998) a case study is an exploration of a “bounded system” over time through detailed, in-depth data collection involving multiple sources of information rich in context. Stake (1995) further distinguishes between the i) intrinsic case study i.e. a case which is unique and therefore should be studied and ii) the instrumental case study i.e. the case studied is used as an instrument to illustrate similar cases. If more than one case is studied, it is referred to as a iii) collective case study.

In this study, cases are referred to as specific countries where part of a system, i.e. the nurse/midwifery aspects of the maternal health care services within a country will be reviewed.

SAMPLE SIZE

According to Creswell (1998), the selection of cases is preferably done by *purposeful sampling* (Strauss and Corbin 1990), which means that cases illustrating different perspectives, unusual cases, ordinary cases or available (convenience sampling) of the issue being studied can be selected. The number of cases and methods to be applied for data collection depends on the time frame as well as finances allotted for the study. A minimum of one country for each sub-region of the Americas will be included in the present study.

DATA COLLECTION METHODS

A case study writer has a large array of approaches to develop the case study. Quantitative (descriptive, analytical) as well as qualitative (explorative, descriptive) approaches are recommended (Yin 1989); only lack of time and financial assets can limit the extensiveness of such a study, in particular when discussing case studies as referred to in this document. However, data collection is extensive and draws on multiple sources of information such as observations, interviews, documents and audiovisual materials. Yin (1989) proposes that the following six types of information be included: i) documentation, ii) archival records, iii) interviews, iv) direct observations, v) participant observations and vi) physical artifacts.

There is no doubt that direct or participant observations are essential methods of data collection in case studies, and if these cannot be conducted, essential information might be lost. However, as the time factor is crucial in the actual case study, it is not feasible to aim for observational studies, and I therefore propose that the following should be included:

- Literature review
- Questionnaires (The General Survey Questionnaire and a Nurse/midwife Questionnaire)
- Interviews

LITERATURE REVIEW

A systematic review/study of available literature related to maternal health care services, providers of services and utilization of services might provide extensive information. Literature should be sought within the country itself (Ministry of health, training institutions, hospital/health centers and organizations such as UNICEF, PAHO, UNDP and NGO's such as women organizations). However, it is also crucial to search research databases (PUBMED, POPLINE, Spanish/Portuguese databases) as well as WHO, World Bank and UN databases.

- Documents/reports/ publications related to the socio-economic situation (education, employment rate, income, living conditions)
- Documents/reports/publications on reproductive status of population
- National/Regional/Local organizational charts (MHC services, referral system)
- Clinical guidelines and audit systems - MCH services
- Curriculum related to nurse/midwife education
- Published/unpublished, national/ regional/international studies related to maternal health status, MHC services, perception of services from care takers and/or caregivers
- National statistics related to maternal/perinatal health status
- Other available statistics related to maternal/perinatal health status (WHO, PAHO, UNDP, UNICEF, World Fact Book)

QUESTIONNAIRES

GENERAL SURVEY QUESTIONNAIRE

The instrument developed for the general survey will also be applied in the case studies. The number of questionnaires to be distributed should not be less than 15 and include the following entities:

- MHC personnel at the ministry of health level
- Teachers at institutions educating nurse/midwives
- MHC personnel at health centers (rural areas) and hospitals (urban areas) (preferably obstetricians and nurse/midwives)

QUESTIONNAIRE FOR NURSE/MIDWIVES PROVIDING MHC CARE (ANNEX I)

The questionnaire has been developed by the Swedish consultant consulting evidence-based practices (Enkin and Keirse, 2001) and life-saving skills (Marshall and Buffington, 1998). Furthermore, the interview format developed by Marshall (1989) for her doctoral thesis has been of valuable assistance when developing the questionnaire for the case study protocol.

The questionnaire needs to be taken to urban as well as rural areas, community, health centers and hospitals. The sample size should be around 100.

INTERVIEWS

“If you want to understand people, why not talk to them” (Kvale, 1996). The qualitative interview is a tool, which aims at discovering phenomena, characteristics or meanings rather than deciding the frequency of a pre-existing problem (Svensson and Starrin 1996) The in-depth or unstructured interviewing, however, requires an interview guide to make sure all aspects regarding the research area is covered (Patton 1987; Svensson and Starrin 1996). An important aspect, which must be honoured in this method, is open questioning that allows the respondent to reflect freely and the researcher to “follow the lead” through probing.

Even if statistics provide knowledge, at times these only serve as indications of the magnitude of a situation like the one we propose to examine. It is therefore regarded as essential to approach the “truth” from another angle and search, in particular caretakers opinions related to MHC services and care received. The following items should be discussed, preferably with urban and rural groups of women and with women’s organizations i) perception of pregnancy and childbirth care, ii) utilization of care during pregnancy and childbirth, iii) payment for care during pregnancy and childbirth and iv) the importance of traditions related to pregnancy and childbirth..

DATA COLLECTION

Research assistants will undertake data collection in the selected countries in collaboration with identified partners of collaboration. The case study report will be a joint effort from the main participants and may preferably be prepared as a scientific article/report to be published in an international peer-reviewed journal.

DATA ANALYSIS

Data analysis will be undertaken under by the identified research centers in collaboration with the selected countries. There are several manners in which this could be done. Yin (1989) proposes that one might either conduct a holistic analysis of the entire case or an embedded analysis of one or several aspects of the case. Stake (1995) argues that a detailed description of the case emerges during analysis as well as the researchers’ identification of themes and interpretation of these. The analysis will definitely depend on which methods are chosen for data collection, and in the present study this will include statistics (SPSS) as well as qualitative thematic analysis.

ETHICAL CONSIDERATIONS

It is essential to seek informed consent from the Ministry of Health in order to undertake this case study. Further consent, such as informed verbal or signed consent from interviewees, need to be sought in accordance with the national guidelines for research.

RESULTS

PROTOCOL FOR LAYOUT OF THE CASE STUDY

1. Introduction

- The context in which the case study was undertaken

2. Background:

- Socio-economic and demographic background of the country
- Cultural aspects
- Brief history on nurse/midwifery role in MHC services in the country

3. Description of methodology

- Planning of study (participants, time frame)
- Data collection (methods used, numbers of data collected in each method)
- Data Analysis

4. Results

- Flowchart of the maternal health care system – where and what kind of MHC/midwifery services are provided and by whom
- Statistics – coverage of MHC/midwifery services (antenatal, childbirth, postpartum, family planning) rural as well as urban
- Educational system for nurses/midwives/auxiliary nurses providing MHC/midwifery care: (Flow Chart, Curriculum description, Supervision system, Category of teachers)
- Statistics – utilization of MHC/midwifery services (antenatal, childbirth, postpartum, family planning)
- Qualitative presentation of care-takers perception - citations from interviews

5. Discussion

- Methodological aspects
- The model of MHC/midwifery services found in the country
- The understood/perceived quality of care – practices and services (in relation to maternal health, utilization of MHC/midwifery services, nurse/midwives perceptions and caretakers perceptions)
- Quality of nurse/midwifery education
- Specific issues identified that influences the MHC/midwifery services and utilization of these
- Recommendations

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APPENDIX I

INTERVIEW PROTOCOL FOR NURSE/MIDWIFE PROVIDING MATERNAL HEALTH CARE SERVICES

*Protocol to be adapted when interviewing nurses or midwives in free standing birthing centers or other non-hospital settings

Country _____ Professional Category _____
 What are you called _____

Interview No _____ Age _____

Education: Years/Months

Basic/elementary _____ Professional _____

Experience of MHC services: Years Health Center (HC)
 Hospital (H) Private Practice
 (PP) Birthing Center (BC)

Antenatal Care _____

Childbirth Care _____

Postpartum Care _____

Family Planning _____

Do you/were you Perform Trained to perform
 the following procedures for:

Antenatal Care

Y/N Y/N

- Monitor uterine height _____
- Monitor blood pressure _____
- Monitor fetal heart rate _____
- Monitor women's weight _____
- Provide nutritional counseling _____
- Measure women's height _____
- Provide prophylactic treatment _____

If yes, what kind of treatment? _____

- Perform tests or assess for sexually transmitted diseases _____

If yes, what types of diseases? _____

Recommend testing for sexually transmitted diseases _____

If yes, what types of diseases? _____

- Diagnose risk pregnancies _____
- Monitor risk pregnancies _____
- Transfer risk pregnancies _____

Do you have the equipment needed to perform the above procedures? _____

If not, what equipment is lacking? _____

- Do you have clinical guidelines for antenatal care: Y/N
- Health Center _____
 - Hospital _____

How many pregnant women do you see per day? (#) _____

Do you keep the woman's antenatal care record with you? (Y/N) _____

What would you say is the average number (#) of antenatal care visits for:

- Nulliparas _____
- Multiparas _____

Do you /were you/where is the following procedures for:	Perform	Trained	Location to perform	performed
Childbirth Care	Y/N	Y/N	Y/N	HC/H

A

- Admit woman in labor _____
- Perform routine shaving? _____
- Give routine enemas? _____
- Take history of women in labor _____
- Monitor fetal heart rate _____
- Monitor uterine contractions _____
- Monitor cervical dilatation _____
- If yes, how often? _____
- Use a partogram _____

B

- Deliver the baby _____
- If yes, in what position? _____
- Dry the newborn baby _____
- Use skin-to-skin care (Kangaroo) _____
- to avoid hypothermia _____
- If yes, at what time postpartum? _____
- Control the newborn's temperature _____
- If yes, how and how often _____
- Weigh the baby _____
- Initiate immediate breastfeeding _____
- Add ophthalmic medicine to the baby's eyes _____
- Resuscitate the newborn baby _____
- Provide cord care _____
- If yes, what type of care is provided _____

Do you /were you/where is the following procedures for:

Perform Trained to perform Y/N
 Location performed Y/N HC/H

C

- Perform episiotomies _____
- If yes, when? Always _____ When needed _____

- Primiparas _____
- Multiparas _____
- Perform episiotomies _____
- Suture (repair) episiotomies _____
- Suture (repair) vaginal lacerations _____
- Suture (repair) cervical lacerations _____
- Deliver the placenta _____
- Manually remove placenta _____
- Bimanually compress the uterus _____
- Prescribe emergency drugs _____
- Deliver breeches _____
- Deliver twins _____
- Perform vacuum extractions _____
- Perform forceps delivery _____
- Assist at caesarean sections _____
- Perform abortions _____
- Give post-abortion care _____

D

- Start IV infusions _____
- Administer oxytocic drugs. If yes, how? _____
- Administer magnesium sulfate as
 - 1st line management of eclampsia _____
- Administer antibiotics
 - If yes, how? _____
- Administer blood transfusions _____

Are the above-mentioned procedures, drugs and treatment available at the:

Y/N

- Health center
- Hospital
- Home

If no, specify

Do you have clinical guidelines for the above-mentioned procedures, and treatment available at the:

Y/N

- Health center
- Hospital

Do you have audit systems in place in case of maternal or perinatal/neonatal death?

Y/N

How long does a woman with normal labor stay at the:

Hours/days

- Health Center
- Hospital

Postpartum care

Y/N

- Are you trained to perform postpartum care?
- If yes, what kind of care are you trained to give?

- Is postpartum care available for women at your:

Y/N

- Health Center
- Hospital

- If yes, describe what kind of care is available?

Family Planning

Y/N

- Are you trained to perform family planning?
- If yes, what kind of family planning are you trained to give?

- Is family planning available for women at your:
Health Center _____
Hospital _____
- If yes, describe what kind of family planning is available? _____

Gynecology Y/N

- Are you trained to perform gynecological care? _____
- If yes, what kind of care are you trained to give? _____

- Is gynecological care available for women at your:
- Health Center _____
- Hospital _____

- If yes, describe what kind of care is available?
