Thursday, 20 November 2008

Maternal Mortality

The proportional role of unsafe induced abortions and mitigating interventions

Introduction

This brief paper will be the first of a series published by the Health Sector Advisory Office (HSAO) that attempts to address aspects of maternal care in Ghana that lead to the current unacceptable high maternal mortality rates. The HSAO will in these papers set out to dissect the complex of contributing factors and issues as well as existing proven remedial action into 'bite size' portions to 'feed' the policy dialogue with technical input, while acknowledging without judgement the inherently sensitive ethical, political, religious and social backdrop. The intended audience does not only constitute health professionals but rather all stakeholders including the end users of health services that take an active part in the debate.

The paper will first describe the global magnitude of maternal mortality and the role played therein by (unsafe) abortions. It will proceed to attempt to quantify the situation in Ghana with respect to (induced and other) abortion and its contribution to maternal mortality ratios. Remedial action, targeted at abortion morbidity and mortality, will be discussed, albeit limiting itself to proven biomedical interventions as described in the latest available scientific literature. For easy reference a bibliography is provided[1].

The status of maternal mortality in the world

An elegant way to visualise the problem of maternal mortality in the world is to plot the proportion of occurrence against landmass

[1] 'Grey' literature describing the Ghana context available in the HSAO

Figure 1: Territory shows population size as a proportion of total world population (2000)[2]

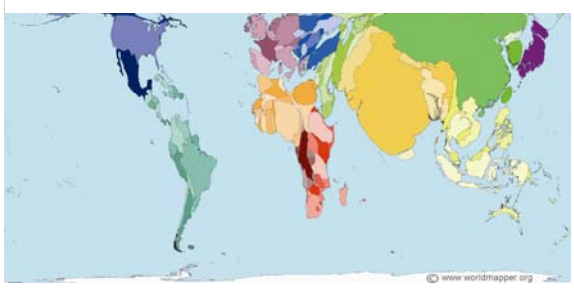
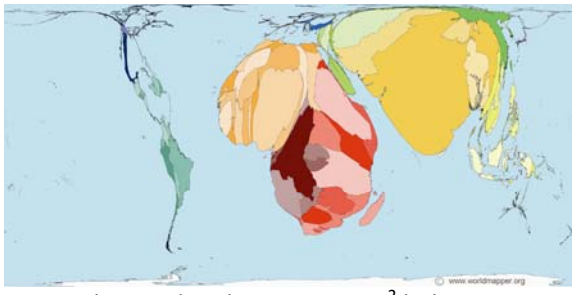


Figure 2: Territory size shows the proportion of deaths of women worldwide while pregnant or within 6 weeks of pregnancy and partly due to it, that occur there (2000)[2]



size as depicted in the cartograms[2] below. Figure 2 clearly illustrates that maternal mortality is predominantly a problem for Asian and Sub-Saharan countries. The situation for Sub-Saharan Africa appears even bleaker when compared with the relative population sizes (Figure). In absolute terms *Maternal Mortality Ratio* range from 1000 per 100,000 live births in Sub-Saharan Africa to almost 500 in South Asia, 250 in Latin America and the Caribbean and around 20 in the industrialised world[3] in the year 2000. Each year an estimated 529,000 maternal deaths occur globally. Before we discuss maternal

[2] © Copyright 2006 SASI Group (University of Sheffield) and Mark Newman (University of Michigan)

[3] C. Ronsmans, W.J. Graham on behalf of the Lancet Maternal Survival Series steering group, www.thelancet.com Vol 368 September 2006

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mortality further it is opportune to clarify the different ways of measuring maternal mortality as poor definition often leads to confused arguments[4]:

- *Maternal death*: The death of a woman while pregnant or within 42 days of the termination of pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.
- *Maternal Mortality Ratio*: Number of maternal deaths during given time period per 100,000 live births during the same period. We can distinguish between institutional Maternal Mortality Ratio, which should be captured by routine Health Information Systems and thus in most instances available, and (total) Maternal Mortality Ratio, which captures all maternal deaths within a given population. This last indicator is more difficult to obtain as it requires (periodic) surveys, resulting in often outdated values at best. The figures above for the global situation refer to total Maternal Mortality Ratio.
- *Maternal Mortality Rate*: Number of maternal deaths in a given time period per 100,000 women of reproductive age, or woman-years of risk exposure in the same time period. When comparing it is important to distinguish this indicator from the earlier mentioned ratio as values will differ significantly for the same population.
- *Lifetime Risk of Maternal Death*: Probability of maternal death during a woman's reproductive life, usually expressed in terms of odds. This indicator

Before interpreting the values of these indicators, it is very important to try and understand their (inter)relationships with and in a given context. To give but a few examples: The Institutional Maternal Mortality Ratio might be looked at as a measure of the quality of assisted deliveries, but only if all other things are equal. The recent free enrolment of pregnant women in the National Health Insurance Scheme in Ghana might influence the characteristics of the presenting population making comparisons of the indicator before and after extremely difficult. The Total Fertility Rate is an indicator that measures a cross section of the existing population and age groups at a defined point in time (and would therefore react slowly to change); in other words it expresses the number of children a woman would have if she was subject to prevailing fertility rates at all ages from a single given year, and survives throughout all her childbearing years. Research has indicated that when fertility starts to decline both abortion and contraceptive use can rise simultaneously (United Nations Population Divison, *World urbanization prospects.* The 2003 revision) pointing at an increasing unmet demand for Family Planning commodities that leaves contraceptive use alone unable to meet the growing demand for fertility regulation. Increasing numbers of abortion will in turn lead to an increasing Maternal Mortality Rate, but not necessarily change the *ratio* figures. In conclusion every maternal death prevented will impact on the Maternal Mortality Rate and (total) Maternal Mortality Ratio, but not necessarily on institutional Maternal Mortality Ratio. Moreover, Maternal Mortality Rates are componded by fertility while Ratios are not. However, contrary to institutional maternal death that is relatively easy to capture, total figures are hard to come by (see remarks definition of (total) Maternal Mortality Ratio). Millenium Development Goal 5, target 6 has as official indicators the (total) Maternal Mortality Ratio and the proportion of births attended by skilled health personnel.

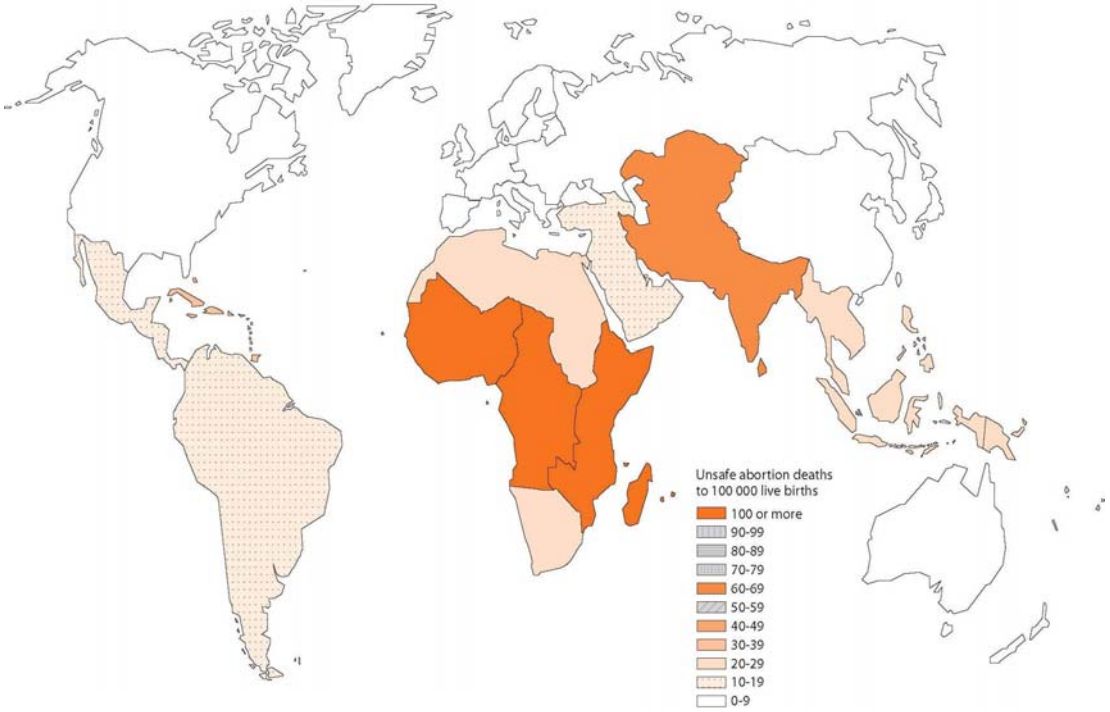
Textbox 1

[4] C. Ronsmans, W.J. Graham on behalf of the Lancet Maternal Survival Series steering group, www.thelancet.com Vol 368 September 2006

is more complex as it includes fertility as well as obstetric risk.

- *Proportional Mortality Ratio*: Maternal deaths as a proportion of all female deaths of those of reproductive age – usually defined as 15-49 years – in a given time period.

Figure 3: Estimated annual maternal deaths due to unsafe abortion to 100,000 live births, by sub regions, 2003



- *Total Fertility Rate*: Total number of children a woman would have by the end of her reproductive period if she experienced the currently prevailing age-specific fertility rates throughout her childbearing life[5].

The role of (unsafe) abortion

The World Health Organisation defines an unsafe abortion as a procedure for terminating an unintended pregnancy carried out either by persons lacking the necessary skills or in an environment that does not conform to minimal medical standards, or both[6]. Globally approximately 42 million[7] pregnancies are voluntarily terminated each year; 22 million within the national legal system and 20 million outside it, the latter regarded as unsafe. Over 5 million (or approximately 1 in 4) women having an unsafe abortion are likely to face severe complications; including death[8] (1.7 million of these women worldwide will develop secondary infertility). Abortion related mortality occurs mainly as a result of unsafe

[5] World Population Prospects: The 2004 Revision. New York, Department of Economic and Social Affairs, Population Division, United Nations, 2005.

[6] The prevention and management of unsafe abortion. Report of a Technical Working Group. Geneva, World Health Organisation, 1992.

[7] Sedge G, Singh S, Henshaw S, Åhman E, Shah I. Induced abortion: the global reality and avoidable risks, Lancet, 2007

[8] Singh S. Hospital admissions resulting from unsafe abortions: estimates from 13 developing countries, Lancet, 2003, 368(9550): 1887-1892

abortion, since spontaneous abortion only rarely causes death, while the case fatality rate for unsafe abortion versus a *lege artis* induced abortion is well over 1000:1 in Sub-Saharan Africa[9]. The rate of admission for complications of unsafe abortions in West Africa is estimated at 6 per 1,000 women between the ages of 15 and 44 years per year[10]. Where induced abortion is restricted or largely inaccessible, little information is available on abortion practice. In such circumstances it is difficult to quantify and classify abortion. What information is available is inevitably not completely reliable, because of legal, ethical and moral considerations that hinder reporting. Occurrence tends to be under-reported in surveys and unreported or under-reported in hospital records. Whether legal or illegal, induced abortion is generally stigmatised and frequently censured by religious teachings or ideologies. Therefore, where induced abortion is restricted or illegal its occurrence can be estimated only indirectly using the available incomplete information on incidence and mortality[11]. Unsafe abortion rates are estimated to be close to 30 per 100 women of reproductive age in both Africa (and Latin

Definitions:

- *Unsafe abortion rate*: The unsafe abortion rate is the annual number of unsafe abortions per 1000 women aged 15–44 years. This measure describes the level of unsafe abortion in a population.
- *Unsafe abortion ratio*: The unsafe abortion ratio is the number of unsafe abortions per 100 live births (as a proxy for pregnancies). The unsafe abortion ratio indicates the likelihood that a pregnancy will end in unsafe abortion rather than a live birth.
- *Unsafe abortion mortality ratio*: The unsafe abortion mortality ratio is the number of deaths due to unsafe abortion per 100 000 live births. This is a subset of the maternal mortality ratio and measures the risk of a woman dying due to unsafe abortion relative to the number of live births.
- *Unsafe abortion case-fatality*: The unsafe abortion case-fatality expresses the estimated number of deaths per 100 000 unsafe abortion procedures; it is sometimes expressed per 100 procedures. This rate shows the mortality risk associated with unsafe abortion.
- *Percentage of maternal deaths due to unsafe abortion*: The percentage of maternal deaths due to unsafe abortion is the number of abortion deaths per 100 maternal deaths. When maternal mortality is relatively low and where other causes of maternal death have already been substantially reduced, a small number of unsafe abortion deaths may account for a significant percentage of maternal deaths. This measure is, therefore, not particularly suitable for comparison purposes.

Textbox 2

[9] Unsafe abortion: Global and regional estimates of the incidence of unsafe abortion and associated mortality in 2003. 5th edition. World Health Organisation, 2007

[10] Singh S. Hospital admissions resulting from unsafe abortion: estimates from 13 developing countries. www.thelancet.com Vol 368 November 25, 2006

[11] Llovet JJ, Ramos S. Induced abortion in Latin America: strategies for future social research. Reproductive Health Matters, 1998, 6(11): 55-65

America), ranging from 39 in Eastern to 18 in Southern Africa. In Eastern, Western, and Middle Africa where maternal mortality is high, the unsafe abortion related maternal mortality ratio is much higher than anywhere else (over 100 per 100,000, double that of Asia having the second worst indicator value). Globally the proportion of maternal deaths due to unsafe abortion has remained close to 13% over time (Maternal Mortality Rate), but regional variations are difficult to interpret. In countries where maternal mortality is relatively low and other causes of maternal death have been substantially reduced, a small number of deaths due to unsafe abortion may account for a significant percentage of maternal deaths. When the Maternal Mortality Rate is high, the percentage of the deaths caused by abortion will be relative low. Therefore the ratio of unsafe abortion deaths per 100,000 live births is a better measure (than the rate per 100,000 women of the fertile age group) of the relative risk of maternal death due to unsafe abortion (see also text box 2).

The situation in Ghana

Although legislation concerning induced abortion in Ghana is arguably amongst the most progressive in Sub-Saharan Africa (see textbox[12]), unfamiliarity with the law and taboos surrounding the subject has driven the practice largely underground. It is therefore notoriously difficult to obtain population wide data on its prevalence and incidence beyond anecdotal and often narrowly targeted studies and research conducted at the institutional level. However, results of these studies are remarkably similar in estimating the magnitude of the problem, more so as most of them specifically state that analysis of available data tends to underestimation. Defining the magnitude of the problem is a first step toward allocating resources to programmes that will improve (post)abortion services.

> The present law on abortion in Ghana is contained in the Criminal Code (29) sec 58 amended in February 1985. The law states that induced abortion is not an offence if it is "caused by a medical practitioner specialising in gynaecology or other registered practitioner in a government hospital or registered private hospital or clinic" when the pregnancy is the result of rape, defilement of a female idiot or incest; when continuation of the pregnancy would involve risk to the life of the pregnant woman or injury to her physical or mental health; or where there is substantial risk that if the pregnancy were carried to term the child would suffer from or later develop a serious physical abnormality or disease.

Textbox 3

Research covering the period of 4 years between 2000 and 2003 in Kassena-Nankana district hospital, Northern Ghana, uncovered an institutional Maternal Mortality Ratio of 759 per 100,000 live births. The leading cause of that was abortion with 29.1%[13]. A safe motherhood survey in four regions (Central, Eastern, Volta and Greater Accra) of Ghana postulates a figure of 27 induced abortions per 100 live births. 90% of all pregnancy losses were due to abortions. Maternal Mortality Ratio was in this study estimated at 758 per 100,000 live births[14]. The lead researcher

[12] Criminal Code of Ghana (29) sec 58

[13] Baiden F, Amponsa-Achiano K, Oduro AR, Mensah TA,Baide R, Hodgson A. Unmet need for essential obstetric services in a rural district in Northern Ghana: Complications of unsafe abortions remain a major cause of mortality. Journal of the Royal Institute of Public Health (2006) 120, 421-426

[14] Ahiadeke C. Incidence of induced abortion in Southern Ghana. IFPP, 27(2):96-101,108, June 2001

estimated maternal deaths caused by abortion at 21%. An assessment of institutional maternal deaths in the Northern, Upper East and Upper West regional and district hospitals in Ghana measured the proportion of deaths caused by abortion complications at 19%[15]. A recent study commissioned by Ipas estimated the number of women treated for incomplete abortion as 105,137 at a direct cost burden on families of USD 8,460,137 annually[16]. The study report puts the proportion of abortion related deaths in some parts of the country as high as 26.5% up from 13.1% in 1987. Given that over the same period overall Maternal Mortality Rates declined, this indicates the increasing role of abortions in maternal deaths. All in all it is safe to assume that, as a conservative estimate, around 20% of all maternal deaths in Ghana are related to abortion complications. With Maternal Mortality Ratios quoted at 224/100,000 (2007 institutional, up from 180 in 2006)[17] and 540/100,000 (total 2000)[18] the subset of maternal deaths as a complication of abortion would be 108/100,000 population wide (the scarcity and anecdotal character of data does not enable distinction between the institutional and population wide (nor urban versus rural) situation and behaviour, forcing generalisation that nevertheless indicates the magnitude of the problem). This would sit squarely within the earlier mentioned regional estimates for West Africa. Abortion complications and deaths are practically always the result of unsafe induced abortions and therefore close to a 100% preventable.

Self reported prevalence levels of abortion were 20% and 16% for men and women respectively (about one quarter of these even reported multiple occurrences) indicate the severity of the social problem[19]. More than 2 out of 3 women would prefer to seek abortion services from a qualified practitioner at a health facility in future; however, cost (and not social taboo) was quoted as the single most important factor inhibiting pregnant women from accessing safe abortion services. Under the National Health Insurance Regulations legal abortion is not covered (although not specifically excluded) under maternity care while obstetric and gynaecological emergencies are[20]. There are indications that induced abortion 'at home' is practiced while subsequently an incomplete abortion is presented at the clinic (which is regarded as a gynaecological emergency), thus providing a negative incentive for seeking safe induced abortion as the option of first resort.

[15] Safe Motherhood Assessment, April-June 2000
[16] Kuma Aboagye P, Gebreselassie H, Quansah Asare G, Mitchell EMH, Addy J. An assessment of the readiness to offer contraceptives and comprehensive abortion care in Greater Accra, Eastern and Ashanti regions of Ghana. Chapel Hill, NC, Ipas, ISBN: 1-933095-19-9, 2007
[17] Ministry of Health. Independent Review Health Sector Programme Work 2007. April 2008
[18] World Health Organisation. Mortality Country Fact Sheet 2006 http://www.who.int/whosis/mort/profiles/mort_afro_gha_ghana.pdf
[19] Research International. Project SWAN; Alliance for Reproductive Health Rights/Ipas/Mary Stopes International Ghana: Baseline research for a KAP study on abortion to help formulate a campaign against unsafe abortion in Ghana. Ghana, August 2008
[20] National Health Insurance regulations, 2004: Schedule II Part I-II (regulation 19(1) and 20)

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Safe abortion care, comprehensive abortion care, post abortion care

This paper will mention and discuss approaches towards the problem of unsafe abortion to mitigate the situation in Ghana:

- Prevention; access to family planning commodities
- Treatment of incomplete abortion; Post Abortion Care/Comprehensive Abortion Care
- Safe induced abortion

Prevention

The Total Fertility Rate for Ghana has sharply declined. Ghana is striking for its steady decline in total fertility despite very modest expansion in contraceptive uptake[21]. Data from the 1998 and 2003 Ghana demographic Health Survey showed that substantial declines in fertility occurred in younger women, with women of ages 15-19 and 20-24 experiencing 41% and 32 declines in fertility respectively from 1998 to 2003. Women aged 25-29 also experienced fertility declines in the mid 1980s and 1990s, but this decline has stalled since 2003[22]. This has led together with funding difficulties for Family Planning Commodities to a large unmet need (estimated by the same report to be 34% of married women), possibly resulting in a rise in induced abortions (although evidence for this is not available, see textbox 1). Underfunding of Family Planning commodities and the resulting unmet need has been clearly identified by the Ministry of Health Ghana as a bottleneck to achieve MDG 5. Possible remedial action to redress the situation falls beyond the scope of this paper and will be discussed elsewhere (REF).

Treatment, induction

The treatment of incomplete abortion and the inclusion of *lege artis* induced abortion are often discussed under the separate terms of Post Abortion Care (PAC) versus Comprehensive Abortion Care (CAC). The medical procedure and psychosocial approach used by both concepts, however, does not significantly differ with the exception that CAC will give a better handle on the pre abortion counseling trajectory, which in itself (the counseling trajectory) might reduce the number of women wanting to go through with abortion induction. A recent survey in Greater Accra, Eastern and Ashanti regions puts the availability of PAC at 93.7% of all hospitals and 12.1% of health centres/clinics/RCH. CAC (inclusion of legal induced abortion) was provided by 68.7% of the hospitals and by only 1.3% of all the other facilities (all facilities were public providers)[23]. The majority (59-76%) of health managers in the surveyed facilities and roughly one third (34-36%) of the health workers are generally or strongly supportive of having early legal abortion care at their facilities. Given adequate training and support, Ghanaian clinicians reported comfort with rendering menstrual regulation (81.4%) and non-

[21] Blanc A, Gray S. Greater than expected fertility decline in Ghana: An examination of the evidence. Accra, Ghana: Macro International and National Population Council secretariat, August 2000

[22] Smith Meaghan, Fairbank A. An estimate of potential costs and benefits of adding family Planning services to the National Health Insurance Scheme in Ghana, and impact on the private sector: Report prepared for the Policy Planning Monitoring and Evaluation Division Ministry of Health Government of Ghana. August 2008.

[23] Kuma Aboagye P, Gebreselassie H, Quansah Asare G, Mitchell EMH, Addy J. An assessment of the readiness to offer contraceptives and comprehensive abortion care in Greater Accra, Eastern and Ashanti regions of Ghana. Chapel Hill, NC, Ipas, ISBN: 1-933095-19-9, 2007

judgmental counseling (77.8%) for women with delayed menses. Less than one half (42.8%) would feel comfortable offering Manual Vacuum Aspiration (see later) up to 12 weeks, safe abortion for adolescents (42%) or Misoprostol (see later) up to 9 weeks (32.4%). Almost one quarter of clinicians (23.4%) were undecided about their future scope or practice[24].

Research indicates that high quality contraceptive counseling as part of a PAC package can induce women to use contraception after having had an unsafe abortion[25].

Surgical procedure

The state of the art surgical procedure for the evacuation of an incomplete abortion or a *lege artis* induced abortion remains MVA. Sharp evacuation (Dilatation and Curettage; D&C) although still widely practiced is discouraged by the World Health Organisation. If properly conducted this procedure is reasonably cheap - MVA equipment will cost around 50 USD and can be used for around 20 interventions - and fully safe for a pregnancy up to twelve weeks. Experience learns that necessary skills can be transferred down to the level of midwife[26], who can perform the procedure proficiently.

Medical procedure

An increasing amount of literature is becoming available on Misoprostol (branded in Ghana as Cytotec) as an alternative to MVA for the treatment of incomplete abortion and the induction of abortion before 9 weeks of pregnancy[27] [28] [29] [30] [31]. Given in the right dosage by qualified health staff Misoprostol appears to be as safe and effective as MVA in evacuating the pregnancy product (success rates of 95 to 99% are quoted). Tanzanian research shows that adverse effects (nausea, vomiting, fever, pain) were higher with Misoprostol although the mean pain score was higher using MVA; client acceptability and satisfaction with the treatment come out higher when using Misoprostol. Given these results Misoprostol appears to be an excellent alternative to MVA. Moreover, the relative ease of administering the treatment does hold promises for the use in rural settings provided a functional referral system might MVA become necessary when persistent bleeding necessitates a secondary MVA (in a minority of cases, see above). The World Health Organisation currently recommends a

[24] Ibid.
[25] Rasch V. Massawe S. Yambesi F. Bergstrom S. Acceptance of contraceptives among women who had an unsafe abortion in dare s Salaam. Tropical Medicine and International Health Volume 9 No3 pp 399-405 March 2004
[26] Verbal Communication Koma s. Jehu-Appiah Ipas Country Director Ghana
[27] Dao B. Blum J. Thieba B. Raghaven S. Ouedraego M. Lankoande J. Winikoff B. Is Misoprostol a safe effective and acceptable alternative to manual vacuum aspiration for post abortion care? Results from a randomised trial in Burkina Faso, West Africa. BJOG 2007 Sep 5
[28] Blum J. Winikoff B. Gemzell-Danielsson K. Ho P.C. Schiavon R. Weeks A. Treatment of incomplete abortion and miscarriage with Misoprostol. Int. J. Gynaecol Obstet. 2007 Oct 23
[29] Ngoc N.T.N. Blum J. Westheimer E. Quan T.T.V. Winikoff B. Medical treatment of missed abortion using Misoprostol. Hung Vuong Hospital, Ho Chi Min City, Vietnam. Int J. Gynaecol Obstet 2004 Nov
[30] Bique C. Ustá M. Debora B. Chong E. Westheimer E. Winikoff B. Comparison of Misoprostol and manal vacuum aspiration for the treatment of incomplete abortion. Int. J. Gynaecol Obstet. 2007 Jul 2
[31] Shwekerela B. Kalumuna R. Kipingili R. Mashaka N. Westheimer E. Clark W. Winikoff B. Misoprostol for treatment of incomplete abortion at the regional hospital level: Results from Tanzania. BJOG 2007 Sep 5

combination of Misoprostol and Mefipristone for the treatment of incomplete and legal abortion. The combination has shown even larger client satisfaction than Misoprostol alone[32]. Official registration of the combination for the treatment of incomplete abortion is pending in Ghana. In the earlier mentioned survey in Greater Accra, Eastern and Ashanti regions 25% of facilities providing legal abortion services used Misoprostol, while the combination was used in only 1 facility (8.3%). For incomplete abortion treatment the figures were 27.2 and 0% respectively.

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