



MEETING REPORT

International Obstetric Fistula Working Group
Data, Indicators and Research Group

11-13 October 2006
Geneva, Switzerland

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Executive Summary

Relatively little is known about obstetric fistula, a severe childbearing injury, which is caused by prolonged obstructed labour. Obstetric fistula has devastating impacts on women's lives and contributes to poor maternal health in many resource-poor countries. Although obstetric fistula is gaining visibility in international and national public health agencies and programmes, epidemiological data, indicators and qualitative research remain weak.

Through the Campaign to End Fistula launched in 2003, global efforts have been strengthened to combat obstetric fistula and to measure burden of disease. In Atlanta in 2006, the international Obstetric Fistula Working Group (OFWG) decided to address the gaps in data and research by forming a Working Group on Data, Indicators and Research. The meeting in Geneva, 11-13 October 2006, was the first in-person session of this group, which is constituted of around 25 health experts, including medical professionals, UNFPA and WHO staff, NGOs and researchers.

Over the course of the three days, the group exchanged information and knowledge. Discussions focused upon providing guidance and support to the following four key areas:

- Establishing burden of disease for obstetric fistula
- Estimating social and economic consequences of obstetric fistula on women, their families and communities
- Improving indicators to capture need for obstetric care and progress towards the provision of treatment, prevention and treated women's social re-integration.
- Facilitating research for translation into policy and programming

The outcome of the four meeting sessions, which including presentations, guided discussions and working group activities, are concrete action plans (see Appendix 2). Overall, the group came to a number of important suggestions and conclusions:

- Most meeting participants agreed that in most circumstances large-scale population-based studies solely to capture fistula prevalence are not recommended. The group supported "piggybacking" on existing periodic studies and recommended a set of standard questions to add to upcoming Demographic and Health Surveys (DHS) in the region.
- It was emphasized that more research is needed regarding the social and economic consequences of obstetric fistula. Qualitative information can explain not only causes and consequences of fistula development and improve qualitative research, but it is also likely to be more powerful for advocacy than prevalence estimates.
- The group further reviewed indicators previously suggested by the OFWG in Niamey in 2005 and in the WHO manual on obstetric fistula. The three working groups on obstetric fistula prevention, treatment and re-integration each began prioritizing indicators.
- Finally, participants brainstormed on the need for greater research and set priorities with regard to obstetric fistula prevention, treatment and re-integration.

I. Background

It has been estimated that 2 million women are suffering from obstetric fistula in resource-poor countries worldwide. Many consider this to be an underestimate, but this cannot be verified as very few population-based studies of the condition exist. A fistula is an abnormal opening between a woman's vagina and bladder (vesico-vaginal fistula) and/or rectum (recto-vaginal fistula). It is predominantly caused by obstructed or prolonged labour without prompt and skilled medical care. Due to the pressure of the baby's skull against the mother's pelvis, the woman's soft tissue is deprived of sufficient blood supply. If the mother survives, the injured pelvic tissue rots away after birth, leaving a whole or fistula between the adjacent organs.

Women with obstetric fistula generally suffer from incontinence of faeces, urine or both with accompanying odour, infection and sometimes infertility. Further complications include nerve damage to the muscles in the lower legs, and the damage of vaginal tissue. Obstetric fistula has devastating effects on women's lives. Unable to fulfil their societal roles as wives and mothers, women are often stigmatized and socially excluded. Limited employment opportunities and restricted participation in the community, as well as frequent abandonment or divorce by the husband, are sadly frequent and make women even more vulnerable.

However, obstetric fistula can be prevented and treated through appropriate interventions which can be provided even in resource-poor countries. Since 2003, global and national organizations have combined their efforts to combat fistula through the Campaign to End Fistula, launched by UNFPA and its partners. The Campaign, currently covering almost 40 countries in Asia, sub-Saharan Africa and the Arab States, has three main objectives in its support to countries to: prevent fistula from occurring, treat existing cases of fistula and assist women that have been treated for obstetric fistula to return to society.

The coordination of global efforts to eliminate obstetric fistula is assured by the Obstetric Fistula Working Group (OFWG), originally formed in 2003. The group established three thematic sub-groups in Atlanta in 2005: 1) Partnership, 2) Data, Indicators and Research and 3) Clinical and Training Issues. The second group on Data, Indicators and Research, which started working in March 2006, seeks to address the still important gaps in qualitative and quantitative research on obstetric fistula. Discussion on these topics has taken place since the beginning of the Campaign, notably at recent meetings in 2005, yet much still remains to be done to fill these gaps. In particular, there has been limited data collected on obstetric fistula prevalence, and currently few fistula elimination programs have adequate data for planning, monitoring or evaluation. The OFWG met for a special session on monitoring and evaluation in Niamey, Niger in 2005 where a number of indicators were proposed to track fistula programmatic efforts, however there is an urgent need to prioritize and validate proposed indicators. The meeting in Geneva allowed the group to move forward with its agenda.

II. Objectives and Meeting Format

The first in-person meeting of the Data, Indicators and Research Group, which took place in Geneva from 11 to 13 October, 2006, brought together over 20 representatives from NGOs, international organisations and academic and medical institutions. The overall objective of the meeting was to discuss the ways and means to improve research and data on obstetric fistula, and to decide on concrete action-plans for the group. The four main objectives, as defined in the group's previous teleconference meeting in May 2006, were the following:

- 1) Establish burden of disease and its consequences
 - A) Compile survey instruments and findings
 - B) Consider the use of regional/national estimates of fistula prevalence for advocacy

- 2) Estimate social and economic consequences of obstetric fistula on women, their families and communities
- 3) Improve indicators to capture need for care and progress toward provision
- 4) Facilitate research

The three-day conference was organized around these four objectives. After the opening session, there was a first session on estimating burden of disease, a second session on improving indicators, a third session on facilitating research, and a fourth session on how to develop, promote and disseminate recommendations. The format of the meeting included presentations, guided discussions and working group activities. The main results of the meeting are specific action plans on estimating burden of disease, improving indicators and facilitating research, and some preliminary recommendations as well as the adoption of a standard set of questions to be used in population-based surveys addressing fistula, including the upcoming Demographic Health Surveys (DHS) in Africa and Asia.

III. Opening session

In her opening statement, Ms Siri Tellier, UNFPA Director in Geneva, emphasized the need for more research on the factors contributing to maternal mortality and morbidity. She regretted that still relatively little is known about obstetric fistula and other causes of maternal morbidity. She noted that better knowledge about fistula prevention, treatment and women's social integration is needed for advocacy work and programming. Better data and information is also crucial to address the problems of poor maternal health with regard to the international objectives and targets set out in the International Conference on Population and Development (ICPD 1994) and the Millennium Development Goals, particularly number five on improved maternal health.

Ms. Kate Ramsey representing the OFWG Secretariat/UNFPA put the work of the group in the wider context of the international efforts to combat fistula briefly describing the history of the international Obstetric Fistula Working Group and the formation of the Data, Indicators and Research Group. Dr. Cynthia Berg of the Centre for Disease Control emphasized the important role the Data, Indicators and Research Group and recalled its objectives. She emphasized that the group supports improved data for decision-making on obstetric fistula worldwide and recognized the distinct needs for data related to advocacy, policy formulation, program planning and evaluation. She noted that limited data had been collected on obstetric prevalence, and few fistula elimination programs, whether they involve prevention, treatment or reintegration, have had adequate data for monitoring and evaluation. Dr. Berg explained that several different indicators had been proposed, but that the usefulness of each of these needed to be considered within the context of its application.

IV. Estimating Burden of Disease

A. Current issues in Data Collection

In the morning of the first session, participants discussed current issues in data collection. The objective was to review the effect of methods and question sets on estimated fistula prevalence and to develop recommendations for establishing burden of disease.

An overview of the various data collection instruments used or proposed for research on obstetric fistula was presented by Dr. Florina Serbanescu of the Centre for Disease Control. She pointed out the specific opportunities and limitation of the various research methods, namely qualitative studies, facility-based routine data, facility-based surveys, and well-established nationwide cross-sectional population-based surveys (i.e. DHS, RHS and MICS). Dr. Serbanescu also showed examples of existing indicators, which are either based on the condition, symptoms, risk factors, social consequences or treatment and outcome of treatment. In consequence, there is a need to consider any method and indicator in the light of a

particular research project, its objective and the human and financial resources available. Dr. Serbanescu further reminded participants that eight per cent of maternal deaths globally are estimated to be caused by obstructed labour, which is the main cause of obstetric fistula (WHO 2000). However, this estimate is often inappropriate to infer maternal mortality at the national level, because in some countries the rate may be several times higher than the global estimate.

The challenges related to estimating global and national prevalence rates were further addressed by Dr. Vincent Fauveau, UNFPA Geneva/Technical Support Division. Based on a paper written by Cindy Stanton, he argued that although fistula is gaining visibility in international and national public health agencies and programmes, epidemiological data and indicators remain poor and often contradictory. Most advocacy work still cites the estimate of a total of 2 million fistula cases and 50,000 to 100,000 new cases per year, inaccurately attributing it to WHO Global Burden of Disease. At the same time, Wall (in Lancet 2006) puts forward the estimate of a total of 3.5 million women currently living with obstetric fistula and C. AbouZahr (in BMJ 2003), using meta-analysis of reported facility cases estimates, estimates an incidence of about 73,000 new cases annually. As Dr. Fauveau pointed out, one way to improve the measurement of the obstetric fistula at the population level could be the application of the sisterhood method, as suggested by Cindy Stanton. The method, which consists of asking women about their sisters' condition, needs however to be tested in particular research projects. This method may more effectively estimate prevalence than the direct interviews with women living with fistula because of: 1) the relative rarity of obstetric fistula; 2) the potentially lower likelihood that a woman living with fistula will be interviewed (e.g. she may have left the household); and 3) the stigma associated with the condition that may result in underreporting. Using this method, however, involves relatively large samples in an area with high fertility rates, and in a cultural setting, in which women are able and willing to report on their sisters' condition.

Dr. Mulu Muleta, of the Addis Ababa Fistula Hospital, presented the methodology and findings of a cross-sectional fistula prevalence survey conducted among 18,000 women in seven rural areas in Ethiopia in 2005. The survey consisted of face-to-face interviews among women with suspected or confirmed fistulas, followed by clinical verification, referral, and focus groups for women with confirmed fistula. The main challenges faced by the researchers were that the survey was costly, time-consuming and difficult to administer. The study found a fistula prevalence rate of 0.22 per cent among women of reproductive age (15-49). This is relatively low in comparison with the estimate of one per cent (1%) of women living with fistula documented by a national DHS conducted during the same year. According to Dr. Muleta, it is likely that the prevalence rate is underestimated for two reasons: first, some women living with fistula may have migrated to monasteries and urban areas due to stigma, and second, cured women often seem to be unwilling to talk about their past history. Dr. Muleta further noted that during the research, 55 obstetric fistula patients were identified. Out of these only 12 were previously operated. She stated that out of the 33 non-operated women, only 20 reached the hospital (61%), despite the fact that all had received money for transportation.

Ms. Kiersten Johnson, DHS/ORC Macro International, reviewed the national demographic health surveys' (DHS) findings on fistula prevalence. She noted that DHS data on fistula were first collected in 2004, are currently available for Malawi, Ethiopia, Rwanda, and will soon be released for Niger, Mali, Uganda and the Democratic Republic of Congo. The available estimated prevalence rates range from 1% in Ethiopia, 1.6% in Malawi, and 3.3% in Rwanda – although each has a different denominator and therefore cannot be compared. Ms. Johnson indicated that DHS survey methodology is promising, but that continued refinement and implementation of the survey instrument is necessary. One challenge is to avoid capturing other types of urinary incontinence because this can be a source of overreporting. There is also a need for further research on the relationship between sexual violence and fistula. Finally, Ms. Johnson emphasized the need to refine the question set and recommended the elaboration of one basic module to reduce variation between countries. As a result, the Data, Indicator and Research group drafted

and recommended a set of key questions, which K. Johnson/DHS will present to ORC Macro International.

Dr. Arvind Pandey of the Institute for Research in Medical Statistics informed the group about maternal morbidity studies in India. He explained that assessing the burden of disease and conducting research on maternal morbidity is still very difficult in India. Very few studies on fistula exist, except some hospital-based case series from the mid-70s and late 80's, which do not say anything about the female patients nor the kind of fistulas observed. Moreover, there has been no recent report on fistula occurrence in the whole of India. More research is needed to look at why so few cases are reported compared to the situation in the neighbouring countries of Bangladesh and Nepal. Mr. Pandey stated that research in India could be fostered through surveillance and provision of fistula treatment care at the 50 Human Reproduction Research Centres affiliated with the obstetrics and gynaecology departments of medical colleges in India and primary health care services at the district and community level.

In the discussion following these presentations, participants acknowledged that the challenges of estimating burden of disease also include low capacity to conduct research and the highly sensitive and often stigmatizing nature of fistula. Some debate was raised about the feasibility of conducting research through collaboration with local health care facilities and personnel, which are often already struggling to fulfil their many other tasks. However, in the case of India research projects involving urologists were seen as a potentially viable way ahead. Finally, participants noted that it was important to standardize survey questions, translate them into local languages, and account for different cultural meanings, as it was done in the case of the Ethiopian fistula survey.

Guided Discussion

In the first guided discussion on how to improve data on obstetric fistula prevalence, the group addressed three main questions:

- Why do we need prevalence data and how will these data be used?
- What methods are recommended for measuring prevalence and incidence?
- Are current question sets adequate to provide the needed information?

Most of the debate involved the first question about the need for prevalence data and its use. Participants generally agreed on the importance of having more and improved data on obstetric fistula prevalence at the global, national and regional level. Despite fistula gaining increased attention in public health discourse, data on its prevalence/incidence (as well as other morbidities) is still relatively poor and often contradictory. Moreover, as public health is based on evidence-based programming, the magnitude and the nature of the problem need to be known. Knowledge about fistula prevalence is essential for the improvement of fistula programmes related to prevention, treatment and treated women's social re-integration.

However, it was also debated whether conducting studies that provide obstetric fistula prevalence is a useful means for fostering national commitment. Some participants argued that revealing the extent of the problem and conducting research projects in collaboration with the various stakeholders could create ownership at the different policy-levels. Others noted that the potentially low prevalence rates were likely to be problematic for advocacy work, since it will not compare to other more prevalent issues on the public health agenda such as HIV/AIDS, malaria or tuberculosis. Participants further acknowledged that fistula prevalence studies generally require a large sample size and hence relatively large financial and human resources. As a consequence, the group emphasized the need to find cost-effective methods for measuring fistula prevalence and incidence at the population level.

The first suggestion of a cost-effective means was to add questions about obstetric fistula into existing national population-based surveys of health topics among women of reproductive age (e.g. DHS, RHS

and MICS). Despite the existing limitations, this approach was generally perceived as a useful mechanism for periodic data collection on obstetric fistula. However, it was highlighted that addition of a fistula module or questions could be difficult in questionnaires where many other modules, e.g. child labour or domestic violence, are also being integrated. Validation of the question sets is also required, perhaps with a subset undergoing clinical exam to determine the sensitivity and specificity of the questions. A second proposition was to add questions to existing community surveillance projects, such as the demographic surveillance sites (DSS). Although this method could be useful for some areas, it is likely to be relatively costly, and data would remain poor in locations where the number of deliveries per year is low. A third method that was considered was the study of treated women through a follow-up process. However, participants noted that follow-up studies are costly, problematic in terms of their replicability, and of little use where home deliveries are frequent. The fourth method discussed was the capture-recapture method, which is used as a cost-effective tool to gather data on a rare disease/event. However, more research and more data are needed to apply this innovative approach to research on obstetric fistula.

In conclusion, participants acknowledged that different regions and countries have different question and data needs. They noted the importance of validating question sets for self-reported conditions and ensuring adequate translation and locally-appropriate terminology. It was therefore suggested that the various methods should be tested and adapted to these particular requirements, and to the purpose of any specific research project. It was also proposed that further review of the data from the Ethiopia study, which included clinical exam and dye test for all suspected cases, would be helpful to better understand the sensitivity and specificity of obstetric fistula prevalence questions.

B. Reviewing Social and Economic Consequences

During the second session on estimating burden of disease, the group looked at measuring the social and economic consequences of obstetric fistula. The objective of the presentations and guided discussion was to review existing data and reports on social and economic consequences and propose plans for qualitative research.

Dr. Saifuddin Ahmed of the Johns Hopkins Bloomberg School of Public Health presented the findings of an extensive literature review from 1985 to 2005. Dr. Ahmed showed that much research had been conducted on the effectiveness and success of surgical repair, but very few studies had examined the adverse social, economic and psychological consequences of fistula development. He noted that research gaps exist in relation to the changes in quality of life before and after treatment, the definition of quality of life for fistula patients and the definition of resilience factors for fistula patients, i.e. how women survive and overcome the odds and adverse life situations. There is also a complete lack of knowledge about the links between fistula development and suicide, domestic violence, murder or bride burning.

On the situation of social vulnerability in Tanzania and Uganda, Maggie Bangser of the Women's Dignity Project (WDP) informed the group of WDP recent research findings. The organization conducted a community-based study, which was based on the views and experiences of affected women and aimed at understanding obstetric fistula risks, consequences and coping mechanisms. The study applied various qualitative methods such as in-depth interviews, participatory research appraisal tools and focus group discussion. The study found that the median age of fistula occurrence was 23 years, less than half of the identified 55 women with fistula were under 19 years old, and about half of the women were at their second or higher pregnancy when they developed fistula. Moreover, divorce of women with fistula was relatively rare and post-repair re-integration successful, except for two of the women. All interviewees were supported by at least one person, although self-isolation was observed. Ms. Bangser therefore suggested that research needed to look at both, women's self-induced isolation and isolation by the family/community. The WDP study also included a brief needs assessment with health care providers, women and CHMT. regarding labour and delivery services in six facilities. Research revealed problems

of shortage of skilled attendants, bad attitudes among health workers towards clients, and women's restricted access to health care services because of the necessity to bring supplies for delivery.

During discussion, participants emphasized that findings on social vulnerability are regionally and culturally specific, and therefore can not be generalized. As in the case of Ethiopia, social support is more problematic (the rate of social exclusion is around 53%) and the average age of fistula patients is lower (18.8 years). The group also agreed on the importance of representative sampling for comparison and data validity. Studies based on interviewing patients in health care facilities or data based on the snowballing technique are often biased; women who are young do not have access to health care services or who are isolated are generally excluded. In addition, it was suggested to analyse the relation between women's level of education and fistula development. The influence of civil society actors, such as the Women Dignity Project, through their advocacy work are also likely to have a positive impact on reducing stigma and facilitating treated women's social re-integration and on the provision of health care services and information.

Guided Discussion

The questions addressed during the second guided discussion were the following:

- Why do we need qualitative research?
- Where are the data gaps in terms of social and economic consequences?
- What type of research would be most useful to fill these gaps?

There was a general agreement on the crucial role of qualitative research on obstetric fistula. Firstly, qualitative studies contribute to the better understanding of the socio-economic, political and cultural processes that are linked to fistula development. Secondly, qualitative research can capture women's very personal experiences, needs, and changes in quality of life. Thirdly, qualitative knowledge on obstetric fistula is essential for better programming and for advocacy work. As one participant noted, although fistula prevalence rates may be relatively low, showing the often dramatic impacts on women's lives can help raise public awareness and create political commitment. The example of Burkina Faso was mentioned, where the Population Council in collaboration with UNFPA conducted a qualitative study on the socio-anthropological perspectives of the condition among women living with fistula and their communities. The project not only led to greater political awareness, but also to an increased role of community organizations in national programming on fistula. Fourthly, studies on cultural practices and sensitivities can contribute to better quantitative research. They can, for example, improve survey design or help determine whether the sisterhood method is likely to work in a particular setting.

Several gaps in research on the social and economic consequences of fistula were identified. In terms of women living with fistula, there is still little data on their well-being, specifically on their emotional and psychological stress. The issues of suicide, depression and stigma associated with obstetric fistula require further exploration. Moreover, the changes in women's quality of life before and after fistula treatment are not fully understood yet, and there is a need to inquire into women's health seeking behaviour, their participation in decision-making processes at the household level and the role of financial costs, especially in relation to transportation. During discussion, it was also noted that data is lacking on the 10% of women for whom fistula repair failed and the 20% of fistula patients who continue to suffer from stress incontinence. The example of such women gathering near the Babbar Ruga Fistula Hospital in Katsina, Northern Nigeria was cited as an example of their precarious economic and social condition. Finally, participants emphasized the need for more research on the role of decentralized versus centralized fistula health care centres in terms of access to fistula treatment, and on the role of NGOs in facilitating access to treatment and the reintegration. Although some research has looked at provider-client relations, there still exist little information about the care providers' difficulties and challenges in working on fistula and client perceptions of care.

A number of suggestions were made regarding the types of research that could fill these gaps. Facility-based studies, for example, can be a valuable starting point for assessing patients' treatment and social integration, but real assessment requires longer-term follow-up and often encounters significant loss to follow-up issues, especially when social stigma is involved. Another suggested approach was increased collaboration with NGOs to assess what works best, particularly to enlist their support in follow-up.

V. Improving Indicators

The agenda for the second day focused upon the development of recommendations for indicators, including their measurement and use. After participants' presentations, three working groups summarized and defined specific sets of indicators with regard to fistula prevention, treatment and women's re-integration after successful fistula repair.

Kate Ramsey, TSD/UNFPA, gave an overview of indicators relating to fistula prevention, treatment and rehabilitation/reintegration. As she explained, there already exist various sets of indicators such as those mentioned in the recently published WHO manual on obstetric fistula and those developed by a group on monitoring and evaluation that met in Niamey, Niger in 2005. She remarked that while the indicators are often divided by the interventions related to prevention, treatment and reintegration – this is a false separation because a certain overlap exists among these three areas. She then highlighted a sampling of the indicators currently proposed remarking on difficulties with some of these indicators. Ms. Ramsey noted that it may be useful to disaggregate the indicators based on region, wealth, education, age or the urban/rural dimension as has been suggested for the MDG indicators on maternal and child health, especially as fistula typically affects more marginalized populations. Indicators must also be considered based on the availability of data through various sources, namely household surveys, situation analysis, health system data, service registers/facility intake forms, Knowledge, Attitudes and Practices surveys (KAP), client interviews or community-based qualitative surveys. Moreover, each indicator should be judged based on whether it is ethical, useful, valid, reliable, representative, understandable and whether the data is available. With regards to the challenges ahead, Ms Ramsey noted the lack of baseline data for some indicators, poor routine data collection in health information systems, unclear definitions in some areas, particularly in reintegration, and the requirement for large population-based studies or long-term follow-up with treated women for some of the indicators.

Barbara Kwast of the Averting Maternal Death and Disability Programme/Columbia University's Mailman School of Public Health examined the six UN Process Indicators for Emergency Obstetric Care (EmOC) for enhancing research and information on obstetric fistula. The UN Process Indicators define the universally minimum standards of EmOC facilities' availability, utilization and quality. The indicators include: number of basic/comprehensive EmOC facilities per 500,000 population, geographic distribution of EmOC, proportion of all expected births in EmOC facilities, met need for EmOC, caesarean sections as a portion of all births and case fatality rate.¹ To date, these indicators have been incorporated into five national Management Information Systems (MIS). They have also been used in over 50 maternal mortality projects and national or sub-national assessment exercises. Through the UN EmOC Indicators, an intervention in Sofala, Mozambique showed positive changes for the period 2000 to 2005. Over 5 years, the Ministry of Health – UNFPA - AMDD project upgraded 13 health centers to provide the full range of Basic EmOC signal functions and improved the quality of care at 10 additional facilities (including four Comprehensive EmOC facilities). During the project period, almost three times as many women were delivering in facilities offering EmOC services (13% in 2000 to 36% in 2005), utilization of facilities among women with complications increased threefold (from 11% to 33%) and the number of cesareans provided at the project facilities almost doubled (from 664 to 1277). At the same time, the case fatality rate was halved (from 2.9% to 1.6%). She also discussed how these could be tailored for

¹ For more information, see

sites/countries that are particularly interested in fistula elimination. She noted that in addition to the six signal functions of basic EmOC, additional essential functions could be considered such as the partograph, IV infusions and indwelling catheter. For comprehensive EmOC sites, in addition to these, fistula repair could also be considered as an essential function. To gain more specificity in the indicators, met need and the caesarean rate could be disaggregated for uterine rupture and obstructed labour. She also proposed other indicators for consideration, such as use of the partograph.

In the following discussion, the political nature of the UN process indicators was emphasized. The group noted that by revealing the positive/negative changes associated with particular EmOC services, political action could be fostered. Nevertheless, participants also noted that the UN process indicators should not be used to foster false hope. For instance, the achievement of the universally suggested 1 comprehensive and 4 basic EmOC facilities per 500,000 inhabitants must be judged in the light a particular location's population density and people's travelling distance to the next facility. It is also necessary to carefully engage with the suggested health care services available in any EmOC service, because low case load in some of these facilities can lead to a loss in expertise, skills and knowledge. There was also some debate about who has better access to EmOC services and what the unmet needs are. Nevertheless, participants agreed that although some of the UN indicators may not be perfect, the whole package is extremely valuable for research on prevention of obstetric fistula.

Indicator Working Group Reports

In the late morning of this second day, participants broke into three working groups in order to review and complement indicators previously suggested in Niamey in 2005 and in the WHO manual on obstetric fistula. The group decided on the categorization of indicators into Prevention, Treatment and Social Re-integration, as initially suggested at the Niamey Meeting on monitoring and evaluation (April 2005). This was considered more appropriate than to separate into Quality/Availability/Utilization or Inputs/Activities/ Outputs. The three questions, which guided the working group discussions and work, were the following:

- What indicators are currently being used or where already proposed? Which are missing?
- Which indicators do we recommend as priority indicators? Consider criteria and source of data
- What is the preliminary definition of each indicator?

What follows is a synthesis of the working groups' suggestions for indicators, however, more work is needed to prioritize these indicators and then to begin validation efforts. These should be considered as draft until this work is finalized in 2007.

DRAFT Indicators for OF Prevention

Objectives	Draft Indicators (suggested data sources/comments)
1. Preventing unwanted pregnancies through family planning and delaying first sex/birth	
Family Planning	- Contraceptive prevalence rate (DHS/RHS) - Outcome - Unmet need (DHS/RHS) - Outcome - Contraceptive security (FP/social marketing programs - Output
Delay first sex/birth	- Median age at first birth (DHS/RHS) - Output - Median age at first sex (DHS/RHS) - Outcome - Spacing between births (percentage of births with a birth interval at least 2 years (DHS/RHS) – Outcome
2. Preventing obstructed labour	
At the Individual level (household level data)	- Knowledge of life-threatening complications (TBE) - % of women who know they should go to a facility if no delivery after 12 hours of hard labour is possible (DHS/RHS)

Objectives	Draft Indicators (suggested data sources/comments)
	<ul style="list-style-type: none"> - % of men who know they should go to a facility if no delivery after 12 hours of hard labour is possible (DHS/RHS) - % of women attending facilities for delivery (DHS) - Time between onset of labour and reaching facility (BDMM) - % of women delivering in facilities who reported prolonged labour (DHS/ RHS) - % of women who have engaged in birth preparedness, e.g. by saving money for the delivery (DHS/RHS)
At the community level	<ul style="list-style-type: none"> - % of communities with transportation arrangements to get to a health facility in case of emergency (community questionnaires, DHS etc.) - % of communities with financial access mechanisms (community questionnaires, DHS etc.)
At the facility level	<ul style="list-style-type: none"> - % of facilities with outreach for community education on obstructed labour and fistula development (SPA, program)
3. Preventing delayed care for obstructed labour	
	<ul style="list-style-type: none"> - % of basic and comprehensive EmOC facilities that are functioning 24/7 in proportion to population size (routine facility-based data collection, health information systems, SPA) - % of labours managed with a partograph and with the adherence to a management protocol (audits)
4. Preventing fistula	
	<ul style="list-style-type: none"> - % of women who survived obstructed labours with or without caesarean section, and who are appropriately managed according to WHO guidelines (facilities audits) - % of all births delivered by caesarean section for obstructed labour (DHS/RHS, facilities) - % of facilities that can perform c-sections within 2 hours (SPA) - % of women estimated to have obstructed labours that were delivered in EmOC facility (facilities) Note: encourage facilities to collect disaggregated data on prolonged versus obstructed labour.
5. Cross-cutting themes	
	<ul style="list-style-type: none"> - Empowerment - Policies - Poverty/inequity - Prevalence of fistula in population - Prevalence of fistula per total admissions (facility) - Quality of care

Draft Indicators for OF Treatment

Objectives	Draft Indicators (comments and definitions)
1. Treatment of obstetric fistula	
	<ul style="list-style-type: none"> - Fistula client profile (Age at time of fistula; parity at time of fistula) - Number of clients seeking fistula repair (1st attempt; 2nd attempt or more, planned additional surgery; previous unsuccessful surgery done elsewhere) - Number/percent receiving fistula repair surgery (By severity; type; and cause) - Number/percent of repair surgery outcome (Closed and dry; closed with stress incontinence/improved; closed but still leaking; irreparable; complications; death) - Time between development of fistula and repair of fistula (< 3 months; 3 months to 1 year; > 1 year)

Objectives	Draft Indicators (comments and definitions)
	<ul style="list-style-type: none"> - Number/percent of women who developed fistula after obstructed labour and who were managed by protocol (Cross-reference with prevention indicators; protocol means catheterization for 4 weeks, fluid intake of 5 litres/day, sitz bath twice a day, debridement) - Outcome of management after obstructed labour (No fistula, dry; fistula requiring repair. See definition of management protocol and repair indicator above) - Number of providers trained to competence (Surgeons to do simple repair; surgeons to do complex repair; surgeons as fistula trainers; nurses/auxiliary staff to do nursing care and counselling/education. Trained means designated by a trainer to be able to perform independently) - Number of repairs performed by each competently trained surgeon per year - Number of sites with functioning fistula repair capacity (For simple repair; for complex repair) - Number of facilities with functioning quality review/improvement process in the maternity unit (Focuses on all levels of prevention, emergency response, and treatment)
2. Planning, Monitoring, Evaluation and Use (see indicators defined in Niamey 2005: 19)	
1. Objective: To establish sustainable national policies and plans including resource allocation of OF treatment	- Existence of a validated plan with resource allocation (A plan includes mention of obstetric fistula., identifies players, and fistula is integrated into national strategy for MH/RH; resources can be financial, human, or logistic; allocation implies a commitment in national annual plan/budget line item)
Strategies to attain this first objective:	
1.1. Establishment of a task force	- Establishment of a multi-sectoral task force to develop and oversee the national plan and mobilize resources (Multi-sectoral is broader than the health sector and means being part of the MH/RH taskforce; oversee means that there is an authority vested in the taskforce to monitor, guide and influence)
1.2. Ensure specific financial mechanisms in place to access treatment	- Budget allocated for the integration of an obstetric fistula plan within a strategy for MH/RH (budget means annual budget)
2. Objective: To strengthen health systems to provide accessible high quality fistula treatment capacities.	<ul style="list-style-type: none"> - Number of clients treated annually - Proportion of total fistula patients treated annually at treatment centre(s) / Total number of women treated over total number of women seeking treatment - Number/ Proportion of repairs that are successful (Success implies that the fistula is closed (85% ideal) and dry (90% of the 85% ideal).
Strategies to attain this second objective	
2.1. To establish at least one high quality functional fistula centre per country	- Number of high quality fistula centres providing treatment for all types of fistula with the approved success rate; at least one per country (High quality means that it is based on definition of success as stated above. Functioning is defined as a continuous year-around service for simple and complex fistula repairs).
2.2. To insure the training of at least 2 trainers per country	- Number of fistula repair trainers in the country; at least two.
2.3. To establish a	- Proportion of referred patients reaching the treatment centre

Objectives	Draft Indicators (comments and definitions)
functional referral system for obstetric fistula	<ul style="list-style-type: none"> - Proportion of treated women returning with feedback information at level 1 and 2 facilities: <li style="padding-left: 20px;">- Number of women arriving with fistula <li style="padding-left: 20px;">- Number/proportion of women repaired At Level 1 facility: <li style="padding-left: 20px;">- Number /proportion of women referred for fistula repair At Level 2 facility: <li style="padding-left: 20px;">- Number/proportion of repaired women referred for follow-up care

Draft Indicators for Social Re-Integration

The group emphasized that defining indicators on treated women's social re-integration is a challenging task. Differences between countries and among women as well as ethical dilemmas such as to provide financial support to women with fistula in poor communities, need to be addressed. The group also noted that a definition of social re-integration is needed taking into account women's own voices, needs and priorities. The suggested indicators can be found in the table below:

Objectives	Draft Indicators
1. At the individual level	
Success of repair procedure	- Proportion of women who access treatment (regardless of outcome)
Improved physical health including: continence; return to fertility and/or sexual life as desired by the woman; improved nutrition	<ul style="list-style-type: none"> - Number/Proportion of women receiving counselling services - Number/Proportion of women accessing family planning - Number/Proportion of women achieving a desired live birth
Improved mental health including: increased self-esteem; peer support	<ul style="list-style-type: none"> - Number/Proportion of women receiving counselling services - Number/Proportion of women experiencing stigma from their community
Increased social connection including: reduced stigma; reintegration into family as desired by the woman; increased social support; participation in social or religious life as desired	<ul style="list-style-type: none"> - Number/Proportion of women receiving counselling services - Proportion of community members with positive attitudes towards women with fistula. - Proportion of male partners that facilitate access to prevention and treatment services - Proportion of women, who can maintain positive household and social relations
Improved economic well-being including: higher income level; engagement in economic activities; family economic support; capacity to support others	<ul style="list-style-type: none"> - Number/Proportion of women receiving counselling services -Number/ Proportion of women, who regain or improve their prior economic status
2. At the national level Referring to the indicators defined in Niamey 2005 (p. 21), the group acknowledged that policy level indicators also need to encompass prevention treatment and reintegration services.	<ul style="list-style-type: none"> - See indicators Niamey 2005 (p.21) - Percentage of national budgets allocated for reintegration services - Fistula reintegration services are incorporated into national policies and plans

3. At the community level	<ul style="list-style-type: none"> - Proportion of women treated that are referred for reintegration services - Number and distribution of community-based reintegration services - Proportion of community members with knowledge about fistula prevention, treatment and rehabilitation - Percentage of community members with positive attitudes towards women with fistula - Proportion of male partners, who facilitate women's access to prevention and fistula treatment services - Proportion of family members, who facilitate women's access to prevention and fistula treatment services
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VI. Facilitating Research

In the morning of the third day, the group discussed the means to facilitate research on obstetric fistula. The session included presentations by participants and a guided discussion.

Dr. Matthews Mathai of WHO/MPS, explained the opportunities of operations research, which generally deals with the coordination and the execution of the operations within an organization and seeks to improve or optimize its performance. A review of all indexed literature found no articles when searching for obstetric fistula and operations research, highlighting large gaps in the evidence-base for programming. Operations research can be a primary means available to support planning, coordination, training and evaluation functions of programmes. It is aimed at increasing the efficiency, effectiveness and quality of services delivered by providers, and at improving the availability, accessibility, and acceptability of services desired by users. Operations research can involve various themes and take the form of an exploratory/diagnostic study, a field intervention study or an evaluative study. However, with regards to obstetric fistula, operations research is still inexistent. Dr. Mathai showed various possible operation research studies on obstetric fistula, which could help assess various aspects: existing services, preventive aspects of operations such as the use of partographs, community involvement in programmes, quality of care or training.

An online clinical cross-country data collection tool was presented by Dr. Charles-Henry Rochat of GFMER. The database developed by the GFMER is already used at facilities in various countries such as Guinea, Burkina Faso and Cameroon. It allows surgeons to enter their data on fistula patients step-by-step and with secured access. The established set of questions includes patient's examination, treatment and follow-up, but each surgeon can personalize the dataset as necessary. The information entered should allow the surgeon to establish a good data set of his/her own work, and to seek advice on the observed type of obstetric fistula and on its treatment. However, the electronic database does not seek to replace paper files, but aims to improve the process and the volume of data gathering, foster exchange of information, and facilitate research involving multiple sites and multiple countries. The use of an optical pen for entering data is currently being tested. Issues such as the exchange of information among surgeons and between surgeons and researchers as well as the importance of patients' informed consent, are being discussed. WHO certification of the database will also be undertaken, including ethical review.

In the following discussion, the group acknowledged the great potential of the GFMER database for research on obstetric fistula. Participants noted it would be problematic for retrospective studies – due to gaps in previous data sets – but also remarked on its great value for current or prospective analyses.

Guided Discussion

In the guided discussion on facilitating research, the group addressed the three following questions:

- What are the priorities for research?

- What can be done by the group/others to facilitate research?
- What guidance and tools are needed for surveillance, research and monitoring?

The group expressed the need to foster population-based data on obstructed labour and fistula, and to have further discussions and research on the clinical aspects of obstetric fistula. More specifically, participants agreed on encouraging specific research themes, questions and methods at the level of the social/client, on the quality and provision of services and with regard to treatment. The group also agreed on preliminary priorities for research on obstetric fistula prevention, treatment and treated women's social re-integration.

Brainstorm of research topics

A) Suggested research at the social/client level:

- documentation of social reintegration with a potential use of follow-up surveys.
- determine what social reintegration means based on women's perspectives
- conduct more research on obstetric fistula prevention and related cultural practices
- research the development of obstetric fistula, especially where services have not been available. What messages can help women access treatment services, even in places where these are not easily available?
- determine what women and their family members know about obstetric fistula and the associated risk factors. What information do they receive during antenatal care?
- conduct studies on traumatic fistula. Do such fistulas occur immediately after traumatic events such as sexual violence, and what is their relation with pregnancy and obstructed labour?
- explore the role of nutrition.

B) Suggested research on the quality and provision of services:

- studies on the proportion of fistula patients presenting for treatment who got their fistula laboured in a hospital.
- Fistula is a perfect example of a near-miss and should connect with ongoing programmes to encourage clinical audit of maternal deaths
- study clients' perspectives on quality of care. Why do some women refuse health care services and information?
- map health care and fistula services.
- foster operations research in order to assess emergency response systems in facilities
- conduct operations research on the different types of service delivery for fistula treatment.
- study the management of labour, also in facilities where staff and equipment are in place (link possibly with WHO study on the partograph in Guinea).
- look at the issue of an accreditation system for visiting surgeons.
- identify best practices in order to facilitate the evaluation of quality of care.

C) Suggested research on obstetric fistula treatment:

- assess the use of antibiotics, especially for prophylactic purposes.
- evaluate the role of bed rest after operation.
- analyse the use of grafts.
- study the differences between early and late fistula repair. Can stigmatization, for instance, be minimized by earlier interventions?
- assess the use of catheterization for preventive purposes. Who can provide such services?

- explore the issue of stress incontinence after operation. What can be done in such cases, and are there possibilities during operation to prevent the problem?
- study more thoroughly iatrogenic fistulas.
- evaluate the role and use of suture material.
- study the role of visiting surgeons.
- conduct case control studies on the use of vacuum extraction and a partograph. Are they helpful to reduce obstetric fistula incidence?
- inquire into innovative approaches to fistula surgery

The group acknowledged that all of this research would be useful for programming, but recommended priority areas among these for immediate study.

Research Priorities

A) Suggested research priorities on obstetric fistula prevention:

- study the proportion of women, who develop fistula after prolonged labour in a hospital facility
- conduct clinical audits related to obstetric fistula/obstructed labour
- develop questions for population-based surveys and conduct validation studies

B) Suggested research priorities on OF treatment:

- analyse the role and importance of early treatment. What is its impact on the outcome of surgery and can it minimize stigmatization?
- assess post-partum management by protocol following obstructed labour and its success rate. Can standards be developed?
- evaluate the training of surgeons to levels of competence for simple or complex repair.
- evaluate the monitoring of quality for obstetric fistula and maternal health more broadly.
- explore possibilities for the accreditation of fistula surgeons.
- assess level of patient's informed consent for procedures.

C) Suggested research priorities on treated women's' social re-integration

- conduct qualitative research on "social reintegration" based on women's perspectives rather than on a normative approach. There is a need to assess the gaps between peoples' expectation and medical staffs' ability to meet these expectations.
- To study community knowledge, attitudes and practices.

VII. Action Plans

On the afternoon of the last meeting day, participants broke again in working groups to adopt concrete action plans for the three themes of the session: measuring burden of disease on obstetric fistula, improving indicators, and facilitating research. Participants decided on objectives and concrete activities. The detailed action plans can be found under Appendix 2.

Appendix 1: Agenda

Wednesday 11 October, 2006

Timing	Agenda Item	Presenter
OPENING SESSION - Chair, Siri Tellier/UNFPA		
9.00 – 9:10	Welcome	Siri Tellier, UNFPA Representative/Geneva
9.10 – 9.30	Introductions and objectives of the meeting	Cynthia Berg, CDC Kate Ramsey, UNFPA
SESSION I: Estimating Burden Of Disease		
Part 1: Current issues in data collection – Chair, Patricia MacDonald/USAID		
9.30 – 9.50	Survey of data collection instruments	Florina Serbanescu, CDC
9.50 –10.00	Sisterhood method for estimating fistula prevalence	Vincent Fauveau/ UNFPA for Cindy Stanton/JHU
10.10 – 10.20	Ethiopia fistula prevalence survey	Mulu Muleta, Addis Ababa Fistula Hospital
10.20 – 10.30	Questions/Clarifications	
10.40 – 11.00	Tea/Coffee Break	
11.00 – 11.20	Review of DHS findings	Kiersten Johnson, DHS/ ORC Macro International
11.20 – 11.40	Challenges in measuring morbidity	Dr. Arvind Pandey, Institute for Research in Medical Statistics
11.40 – 13.00	<u>Guided discussion – Questions to answer:</u> Why do we need prevalence data? What is the effect of different methods on estimated fistula prevalence? of question sets? What methods are recommended for measuring prevalence and incidence? For what purposes? Are current question sets adequate to provide the needed information?	
13.00 – 14.00	Lunch	
14.00 – 14.30	Consider the use of regional estimates of fistula prevalence for advocacy <u>Guided discussion – Questions to answer:</u> Are country-specific estimates necessary? How should they be derived? Regional models? Surveys of individual countries? Through ongoing surveys?	
Part 2: Reviewing social and economic consequences - Chair, Richard Dackam/UNFPA		
14.30 – 14.50	Review of existing studies	Saifuddin Ahmed, JHU School of Public Health
14.50 –15.10	Community-based research	Maggie Bangser, Women’s Dignity Project
15.10 – 15.40	Tea/Coffee Break	
15.40 – 16.30	<u>Guided discussion – Questions to answer:</u> Why do we need qualitative research? Where are the data gaps in terms of social and economic consequences? What types of research would be most useful to fill these gaps? What challenges are likely to be encountered?	

Thursday 12 October, 2006

Timing	Agenda Item	Presenter
SESSION II. Improving Indicators – Chair, Luc de Bernis, UNFPA		
9.00 – 9.50	Brainstorm: For what purposes do we need indicators?	
9.50 – 10.10	Overview of work on indicators	Kate Ramsey, UNFPA
10.10 – 10.30	Process indicators	Barbara Kwast, AMDD
10.30 – 10.50	Coffee/Tea Break	
10.50 – 11.20	Discussion on outcome vs. (or plus) output indicators	
11.20 – 13.00	Working groups: Three groups separated by purpose (1-prevention, 2-treatment, 3-reintegration) answer a series of questions: What indicators are currently being used or were already proposed? Which are missing? Which indicators do we recommend as priority indicators? Consider criteria and source of data What is the preliminary definition of each indicator?	
13.00 – 14.00	Lunch	
SESSION II Continues – Chair, Florina Serbanescu, CDC		
14.00 – 15.40	Report back from the groups and discussion	Working group rapporteurs
15.40 – 16.00	Tea/Coffee Break	
16.00 – 17.00	Discussion on sources of data for indicators: How can these indicators be measured? Do we have baseline? What are the potential challenges/difficulties in collecting the data for these indicators?	

Friday 13 October, 2006

Timing	Agenda Item	Presenter
9.00 – 10.00	Continued work on indicators	
SESSION III. Facilitating Research – Chair, Karen Beattie/AQUIRE		
Objective: To develop a plan of needed research and ways to promote research		
10.00 – 10.20	Clinical cross-country data collection tool	Charles-Henry Rochat, GFMER
10.20 – 10.40	Operations research	Matthews Matthai, WHO
10.40 – 11.00	Discussion of presentations	
11.00 – 12.00	<u>Guided discussion – Questions to answer:</u> What are the priorities for research? What can be done by the group/others to facilitate research? What guidance and tools are needed for surveillance, research and monitoring?	
SESSION IV. Develop, Promote and Disseminate Recommendations - Chair, Cynthia Berg, CDC		
Objective: To determine action plans to achieve the product(s)/roles of the group that will help advance data collection and research.		
12.00 – 13.00	Working groups based on the three main sessions (1- estimating burden of disease, 2- improving indicators, 3- facilitating research) utilize a framework to outline action plans in each of the key areas	
13.00 – 14.00	Lunch	
14.00 – 16.00	Report back, discussion and next steps	

Appendix 2: Action plans

2.1. Action plan for estimating burden of disease

Objectives	Activities
Country level estimates	Collect survey instruments
	Incorporate the recommended question set into national DHS
	Examine perinatal mortality in relation to fistula reporting from DHS countries
	Validate questions Calculate the specificity of fistula question
Risk factors for fistula/obstructed labour	
Global estimate	Explore the estimation methods of global burden of disease for obstetric fistula
Literature review update	Current health status, social consequences, psychological status.
	Post-operative follow-up for improvements in QOL (pending funding)

2.2 Action plan for improving indicators

Improve indicators for assessing progress in preventing fistula and provision of treatment care	Finalize the crosscutting indicators (i.e. policy environment and quality of care)
	Finalize the indicators selected by the working groups (prevention; treatment; reintegration)
	Merge all indicators in one list and send it to the meeting participants
	Organize conference call/meeting to prioritize the indicators

2.3. Action plan for Facilitating Research

Objective	Action
Develop promote and help disseminate tools for surveys, surveillance, research and monitoring and evaluation activities – how can group undertake and support research	Create a list of research studies in development or ongoing to be posted on UNFPA-hosted portal
	Next meeting include on agenda review of on-going research studies – to include discussion of how to share protocols and instruments (perhaps for sharing on UNFPA portal)
	Review GFMER database forms and send comments for amendment, addition
	Complete WHO process for review of GFMER database
	Develop and fund small grants process for research on fistula or identify existing opportunities to “piggyback” on to existing studies.
Outline and prioritize research needs to estimate the social and economic consequences of fistula on women and their communities	See the list of suggested research and research priorities elaborated during the third conference day.
	Review list of ongoing/proposed studies to determine where there are gaps and encourage or identify research possibilities
Outline and prioritize research needs with respect to epidemiology and operations research & clinical	Same as above
Consider the needs and opportunities for translation of data to policy and practice	Disseminate the WHO Guiding Principles, including French version
	Encourage review and adoption of WHO Guiding Principles by National Committees for fistula or Safe Motherhood

Appendix 3: Proposal of Questions for Fistula Module in the DHS

(consider short and longer module)
(please suggest ways to increase specificity)

Q1. Sometimes a woman can have a problem, usually after a difficult childbirth, such that she experiences a constant leakage of urine or stool from her vagina during the day and night. Have you ever experienced this problem?

YES

NO → skip out of remaining questions

(suggestion for longer module: if woman says she has not experienced this problem, ask her if she has heard of such a problem)

Q2. When/how did this problem occur?

After an uncomplicated delivery |
After a difficult delivery, child born alive |→
After a difficult delivery, child born still _|
After sexual assault
After a pelvic surgery (down below)
Other (specify)

Q3. For which delivery did this occur?

1. First delivery
2. Most recent delivery
3. Between delivery x and y

Q3a. How many days after delivery/precipitating event did this problem start?

Q4. Have you sought treatment for this condition?

YES (suggestion for longer module: Where did you get the treatment? Was it successful?)

NO (suggestion for longer module: Why have you not sought treatment?)

Did not know problem could be fixed
Do not know where to go
Cannot afford to get treatment
Too far to reach treatment facility
Poor QOC at facility
Could not get permission to go
Other (specify)

Appendix 4: Background Documents

WHO. Obstetric Fistula: Guiding Principles for Clinical Management and Programme Development. World Health Organization, Geneva: 2006.

UNFPA. Obstetric Fistula Working Group Meeting Report: Developing a Results Framework for the Campaign. Niamey, April 2005.

Johns Hopkins Bloomberg School of Public Health, et al. Meeting Summary: Prevention and Treatment of Obstetric Fistula: Identifying Research Needs and Public Health Priorities. (unpublished).

Wall L, Arrowsmith S, Briggs N, et al. The Obstetric Vesicovaginal Fistula in the Developing World. *Obstetrics & Gynecology Survey* (Vol. 60 (7 Suppl 1)).

Emergency Obstetric Care Process Indicators:

UNICEF/WHO/UNFPA. Guidelines for monitoring the availability and use of obstetric services. UNICEF, New York: 1997.

V. Fauveau, F. Donnay. Can the process indicators for emergency obstetric care assess the progress of maternal mortality reduction programs? An examination of UNFPA Projects 2000 — 2004. *IJGO* (2006) 93, 308-316.

P. Bailey, A. Paxton, S. Lobis, D. Fry. The availability of life-saving obstetric services in developing countries: An in-depth look at the signal functions for emergency obstetric care. *IJGO* (2006) 93, 285-291.

Appendix 5: List of Participants

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