

# Data Collection: Bridging the Gap Between Communities and Policymakers

## Supplemental Background Notes

Data collection is particularly complex for maternal health advocates, because collecting data on maternal morbidity and death is so difficult. National registration systems are often inadequate to provide accurate estimates of maternal mortality. Additionally, morbidities are difficult to define and measure.

Traditionally, information on maternal mortality has been collected in hospital-based studies. In rare circumstances, population surveillance systems have reported on maternal deaths. Generally, serious under-reporting of maternal deaths is due in part to the misclassification of deaths. Advocates must always supplement quantitative studies with qualitative data

and case studies to show policymakers the true magnitude of maternal mortality in a given setting. Qualitative data are also useful in settings where advocates are accused of exaggerating prevalence figures.

“I have seen mothers who are suffering from eclampsia and the doctors just do not have the resources to treat their condition. Since the government is ashamed that we no longer have the resources we used to have, doctors are often fined when a mother dies in childbirth. Since doctors are so poorly paid now, we do not have the money to pay these fines. If a doctor has to choose between caring for his or her family or paying the fine, the doctor may send the dying mother home so her death is not recorded and the fine will not be imposed.”

-Anonymous doctor, Uzbekistan

When we were outside of the ward a nurse came in and told other moms: “You’d better wash your hands with chlorine and never let [Natasha] approach your babies. She has AIDS and her baby is infected. Be careful, for you can pick it up from her.”

-Odessa, Ukraine

From the book, *“Here and Now”: People Living with HIV/AIDS Telling about Themselves*, by “Faith, Hope, and Love” NGO, UNAIDS, and UNDP, 2000.

## Modifications to Activities

### ACTIVITY 1

#### Introduction

- Emphasize the specific challenges of data collection for maternal health programs and policies, as outlined in the supplemental background notes.
- Describe the Safe Motherhood Model (see Maternal Health Handout III.5.1: Data and Information Resources).
- Incorporate the maternal death audit or verbal autopsy into the introduction (see Maternal Health Handout III.5.6: Measuring Maternal Mortality).

## ACTIVITY 2

- Draw on the quotes from the anonymous doctor in Uzbekistan and the Ukrainian health care worker.

**Research Scenarios**

- Scenario 2 already uses a topic directly related to maternal health. Other scenarios include:

**Data Collection Scenario 1**

Your network has decided to focus on educating the community about danger signs during pregnancy and childbirth and the implementation of a birth and complications readiness plan. Members will use advocacy messages to convince household decision makers to take action to support this initiative. A survey of households in a representative community reveals that mothers-in-law and husbands are the main decision makers in the family and that they do not see the need to have a birth plan. In addition, you find out that a woman cannot be seen in clinics unless her husband or another elder male accompanies her.

*Question:* What implications do these data have for your advocacy strategy and the message you will deliver to household decision makers?

**Data Collection Scenario 2**

The Ministry of Health funds a surveillance survey in five hospital-based maternity wards. In your review of the findings, one of the hospitals showed an increase in maternal deaths compared with the prior two years. Hospital officials report that the sudden increase was due to more women from rural areas coming to the hospital to deliver, whereas in prior years these women would have delivered in their villages. However, rural women coming from the villages were often arriving with serious complications that at times were too late to manage.

*Questions:* How would your advocacy network use this information in setting priorities for an advocacy strategy? If your advocacy strategy is in place, how might this information modify your plans?

**Data Collection Scenario 3**

Through informal interviews in a rural community, you find out that husbands are not encouraging their pregnant wives to deliver at the hospital because the cost of supplies is too high. The community was encouraged to develop a system with which to collect community funds so that at least women with complications could pay for the care they needed at local hospitals. Some men in the community, especially those whose wives were past their reproductive years or who were practicing family planning, were against contributing to the pool because their wives would never use these resources.

*Questions:* What data will you use to show that the entire community benefits from allowing its pregnant women to have access to such resources? How will you present your information in such a way that will promote solutions?

## ACTIVITY 3

## ACTIVITY 4

## ACTIVITY 5

## ACTIVITY 6

## ACTIVITY 7

## ADDITIONAL HANDOUTS

### Data Collection Scenario 4

Currently, there is a shortage of OB-GYNS at the major referral hospital in your district. Your network knows that there are many capable midwives that can be trained to manually remove the placenta after delivery or perform emergency vacuum extractions. The Ministry of Health needs to be convinced that these midwives can be trained to handle the cases needing such services at the referral hospital.

*Questions:* What data do the network need to convince the ministry this solution to the shortage is a viable one? How could it obtain the data?

### Data Collection Techniques

- Make sure participants are aware of the specific quantitative and qualitative data resources available to them. In the area of maternal health, there are many sources available on the Internet. These resources are detailed in Handouts III.5.1: Data and Information Resources and III.5.2: Maternal Health Internet Resource List.

### Baseline Assessment

- The exercise is equally valid for evaluating maternal health programs. Participants can see from the example described in the associated handout how baseline techniques are applied to maternal health programs for program design purposes.

### Interviews

- The exercise applies equally to interviewing for maternal health programs. Substitute the Interview Topic Guide (Maternal Health Handout III.5.4: Interview Topic Guide) in this supplement.

### Focus Group Discussion

- Proceed as instructed in the manual.

### Secondary Data Analysis

- Divide participants into three groups.
  - Group 1: Current Use and Fertility
  - Group 2: Antenatal Care
  - Group 3: Skilled Attendance at Birth
- Distribute the appropriate data set to each group. For Group 1, use the data set provided in the original manual. For Groups 2 and 3, use the data sets included as Maternal Health Handout III.5.5: Secondary Data Analysis.

- Maternal Health Handout III.5.1: Data and Information Resources
- Maternal Health Handout III.5.2: Maternal Health Internet Resource List
- Maternal Health Handout III.5.3: Data Collection Scenarios
- Maternal Health Handout III.5.4: Interview Topic Guide
- Maternal Health Handout III.5.5: Secondary Data Analysis
- Maternal Health Handout III.5.6: Measuring Maternal Mortality
- Maternal Health Handout III.5.7: The Four Delays Model

## Data and Information Resources

### Data Sources

To speak to policymakers about the importance of reducing maternal mortality, advocates can rely on information and data produced with various computer models and composite indices.

**Safe Motherhood Model.** The POLICY Project has developed the Safe Motherhood Model, a statistical model to represent the relationships between a national maternal health program and the resulting maternal mortality ratio and number of maternal deaths. Data show that the stronger the national program, the lower the ratio and the fewer the deaths. The model [Excel version] was approved for application in October 2001. The first field applications took place in Ethiopia, Guatemala, and Uganda. The model is well suited to multisectoral policy dialogue on interventions that can reduce maternal mortality.

**Maternal and Neonatal Program Effort Index.** The Maternal and Neonatal Program Effort Index (MNPI) is a tool that reproductive health care advocates, providers, and program planners can use to assess maternal health program features and can create a baseline to track progress over time. The index rates program inputs and services, political and popular support, and assesses the magnitude of efforts devoted to the reduction of maternal mortality and morbidity and closely related neonatal items. Results from the 1999 MNPI application are available for 49 countries. The MNPI was re-administered in 2002 in 57 countries.

**REDUCE Model.** The REDUCE Model, a computer model developed by the SARA Project, may be used by advocates and policymakers to project the consequences of maternal mortality and morbidity at the country level. This model projects the socioeconomic impacts of maternal death and disability.

### Information Resources

Many maternal health advocates use the Internet as a source of information. Some key websites include the following:

- The Safe Motherhood Initiative has a variety of media and materials, including fact sheets. <http://www.safemotherhood.org>
- The Maternal and Newborn Health, Department of Reproductive Health and Research, World Health Organization, contains several tools for making motherhood safer and provides a link to World Health Organization publications on this topic. <http://www.who.int/reproductive-health/MNBH/index.htm>

- Maternal and Neonatal Health Program is USAID's flagship program to reduce maternal and neonatal deaths. The site includes materials and links to other resources related to maternal health.  
<http://www.mnh.jhpiego.org>
- The Reproductive Health Outlook (RHO) website provides up-to-date summaries of research findings, program experience, and clinical guidelines related to key reproductive health topics, including safe motherhood, as well as analyses of policy and program implications.  
[http://www.rho.org/html/safe\\_motherhood.htm#](http://www.rho.org/html/safe_motherhood.htm#)
- The United Nation's Population Fund's (UNFPA's) website provides up-to-date statistics, fact sheets, publications, links, a glossary, and donor information relevant to making pregnancy safer for women around the world. <http://www.unfpa.org/mothers/index.htm>

## Maternal Health Internet Resource List

### Development, Education, Population, and Public Health

- [Academy for Educational Development \(AED\) www.aed.org](http://www.aed.org)
- [Africare www.africare.org](http://www.africare.org)
- [American Public Health Association \(APHA\) www.apha.org](http://www.apha.org)
- [Amigos de las Americas www.amigoslink.org](http://www.amigoslink.org)
- [Centers for Disease Control and Prevention \(CDC\) www.cdc.gov](http://www.cdc.gov)
- [Centre for Development and Population Activities \(CEDPA\) www.cedpa.org](http://www.cedpa.org)
- [Department for International Development \(DFID\) www.dfid.gov.uk](http://www.dfid.gov.uk)
- [Futures Group www.futuresgroup.com](http://www.futuresgroup.com)
- [JHPIEGO www.jhpiego.org](http://www.jhpiego.org)
- [Johns Hopkins University Center for Communication Programs \(JHUCCP\) www.jhuccp.org](http://www.jhuccp.org)
- [John Snow, Inc. \(JSI\) www.jsi.com](http://www.jsi.com)
- [Management Sciences for Health www.msh.org](http://www.msh.org)
- [Media/Materials Clearinghouse \(JHU/CCP\) www.jhuccp.org/mmc](http://www.jhuccp.org/mmc)
- [National Center for Education in Maternal & Child Health \(NCEMCH\) www.ncemch.org](http://www.ncemch.org)
- [National Institutes of Health \(NIH\) www.nih.gov](http://www.nih.gov)
- [Population Action International \(PAI\) www.populationaction.org](http://www.populationaction.org)
- [Population Communications International \(PCI\) www.population.org](http://www.population.org)
- [Population Reference Bureau \(PRB\) www.prb.org](http://www.prb.org)
- [Population Services International \(PSI\) www.psiwash.org](http://www.psiwash.org)
- [PLANET www.planetwire.org](http://www.planetwire.org)
- [Tools for Life \(JHUCCP\) www.jhuccp.org/tools](http://www.jhuccp.org/tools)
- [United Nations Population Fund \(UNFPA\) www.unfpa.org](http://www.unfpa.org)

### Global Development, Humanitarian Relief, and Donor Organizations and Foundations

- [American Red Cross www.redcross.org](http://www.redcross.org)
- [American Refugee Committee www.archq.org](http://www.archq.org)
- [CARE www.care.org](http://www.care.org)
- [Catholic Relief Services \(CRS\) www.catholicrelief.org](http://www.catholicrelief.org)
- [InterAction www.interaction.org](http://www.interaction.org)
- [MAP International www.map.org](http://www.map.org)
- [Outreach International www.outreachinternational.org](http://www.outreachinternational.org)
- [Oxfam America www.oxfamamerica.org](http://www.oxfamamerica.org)
- [United Nations \(UN\) www.un.org](http://www.un.org)
- [United Nations Children's Fund \(UNICEF\) www.unicef.org](http://www.unicef.org)
- [USAID: Global Health www.usaid.gov/pop\\_health](http://www.usaid.gov/pop_health)
- [World Health Organization \(WHO\) www.who.int/home-page](http://www.who.int/home-page)

### Health Policy

- [The Center for Reproductive Rights \(formerly The Center for Reproductive Law and Policy\) www.crlp.org](http://www.crlp.org)
- [Institute for Child Health Policy \(ICHP\) www.ichp.edu](http://www.ichp.edu)
- [Ipas: Initiatives in Reproductive Health Policy www.ipas.org](http://www.ipas.org)
- [Eldis: Health Policy www.eldis.org/health](http://www.eldis.org/health)
- [Maternal & Child Health Policy Research Center www.mchpolicy.org](http://www.mchpolicy.org)

### Health Statistics, Databases, and Research

- [Churchill Livingstone www.elsevier-international.com/cl](http://www.elsevier-international.com/cl)
- [Cochrane Collaboration www.cochrane.de](http://www.cochrane.de)
- [Data from Developing Countries www.biko.sscnet.ucla.edu/dev\\_data/data.htm](http://www.biko.sscnet.ucla.edu/dev_data/data.htm)
- [Demographic and Health Surveys \(DHS\) www.measuredhs.com](http://www.measuredhs.com)
- [Eldis: The Gateway to Development Information www.eldis.org](http://www.eldis.org)
- [Elsevier Science www.elsevier.com](http://www.elsevier.com)
- [Harvard School of Public Health Global Maternal & Child Health Links www.hsph.harvard.edu/Academics/mch/home/resources/links/links.html](http://www.hsph.harvard.edu/Academics/mch/home/resources/links/links.html)
- [Healthlink www.healthlink.org.uk](http://www.healthlink.org.uk)
- [Infonation www.un.org/Pubs/CyberSchoolBus/infonation/e\\_infonation.htm](http://www.un.org/Pubs/CyberSchoolBus/infonation/e_infonation.htm)
- [The Library of Congress Online Catalog www.catalog.loc.gov](http://www.catalog.loc.gov)
- [PubMed www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)
- [National Maternal and Child Health Clearinghouse \(NMCHC\) www.ask.hrsa.gov/MCH.cfm](http://www.ask.hrsa.gov/MCH.cfm)
- [OBGYN.net Image Library www.obgyn.net/image\\_library/image\\_library.asp](http://www.obgyn.net/image_library/image_library.asp)
- [Popline www.jhuccp.org/popline](http://www.jhuccp.org/popline)
- [PopNet www.popnet.org](http://www.popnet.org)
- [Population, Health & Nutrition Information Project www.phnip.com](http://www.phnip.com)
- [Population Reference Bureau www.prb.org](http://www.prb.org)
- [U.S. Census International Database www.census.gov/ipc/www/idbnew.html](http://www.census.gov/ipc/www/idbnew.html)
- [Virtual Health Library www.dse.de/zg/lernbibl/lernbib.htm](http://www.dse.de/zg/lernbibl/lernbib.htm)
- [World Health Organization Statistical Information System www.who.int/whosis](http://www.who.int/whosis)

### Maternal Health

- [Childbirth.org www.childbirth.org](http://www.childbirth.org)
- [Maternal and Child Health Bureau \(MCHB\) www.mchb.hrsa.gov](http://www.mchb.hrsa.gov)
- [The Maternal and Neonatal Health \(MNH\) Program www.mnh.jhpiego.org](http://www.mnh.jhpiego.org)
- [MotherCare www.jsi.com/intl/mothercare](http://www.jsi.com/intl/mothercare)
- [OBGYN.net www.obgyn.net/pb/pb.asp](http://www.obgyn.net/pb/pb.asp)
- [Safe Motherhood www.safemotherhood.org](http://www.safemotherhood.org)
- [USAID Nutrition and Maternal Health www.usaid.gov/pop\\_health/nmh/nmhhome.htm](http://www.usaid.gov/pop_health/nmh/nmhhome.htm)
- [White Ribbon Alliance for Safe Motherhood www.whiteribbonalliance.org](http://www.whiteribbonalliance.org)

### Ministries of Health, Professional and Medical Organizations

- African Medical and Research Foundation (AMREF) [www.amref.org](http://www.amref.org)
- American College of Nurse-Midwives (ACNM) [www.midwife.org](http://www.midwife.org)
- SatelLife [www.healthnet.org](http://www.healthnet.org)
- International Confederation of Midwives [www.internationalmidwives.org](http://www.internationalmidwives.org)
- Links to Midwifery Associations  
[hometown.aol.com/Midgewife/linksmidwifery.html](http://hometown.aol.com/Midgewife/linksmidwifery.html)
- Ministries of Health World Wide [www.who.int/emc/surveill/mohglobal.html](http://www.who.int/emc/surveill/mohglobal.html)

### Neonatal Health

- Child Health Research Project [www.childhealthresearch.org](http://www.childhealthresearch.org)
- Save the Children [www.savethechildren.org](http://www.savethechildren.org)
- Saving Newborn Lives Initiative  
[www.savethechildren.org/mothers/learn/newborn.htm](http://www.savethechildren.org/mothers/learn/newborn.htm)

### Nutrition

- Africa Nutrition Database Initiative [www.africanutrition.net](http://www.africanutrition.net)
- Helen Keller International (HKI) [www.hki.org](http://www.hki.org)
- The Linkages Project [www.linkagesproject.org](http://www.linkagesproject.org)
- Opportunities for Micronutrient Interventions (OMNI)  
[www.jsi.com/intl/omni/home](http://www.jsi.com/intl/omni/home)

### Reproductive Health

- The Alan Guttmacher Institute [www.agi-usa.org](http://www.agi-usa.org)
- Family Care International (FCI) [www.familycareintl.org](http://www.familycareintl.org)
- Family Health International (FHI) [www.fhi.org](http://www.fhi.org)
- INTRAH [www.intrah.org](http://www.intrah.org)
- Pathfinder International [www.pathfind.org](http://www.pathfind.org)
- The POLICY Project [www.policyproject.com](http://www.policyproject.com)
- Reproductive Health Outlook (RHO) [www.rho.org](http://www.rho.org)
- ReproLine® [www.reproline.jhu.edu](http://www.reproline.jhu.edu)

### Women/Women's Health

- Feminist Majority Foundation (FMF) [www.feminist.org](http://www.feminist.org)
- International Center for Research on Women (ICRW) [www.icrw.org](http://www.icrw.org)
- International Women's Health Coalition (IWHC) [www.iwhc.org](http://www.iwhc.org)
- WomanKind Worldwide [www.womankind.org.uk](http://www.womankind.org.uk)
- Women's Issues - 3rd World [women3rdworld.miningco.com](http://women3rdworld.miningco.com)
- WomenWatch [www.un.org/womenwatch](http://www.un.org/womenwatch)

## Maternal Health Handout III.5.3

## Data Collection Scenarios

### *Data Collection Scenario 1*

Your network has decided to focus on educating the community about danger signs during pregnancy and childbirth and the implementation of a birth and complications readiness plan. Members will use advocacy messages to convince household decision makers to take action to support this initiative. A survey of households in a representative community reveals that mothers-in-law and husbands are the main decision makers in the family and that they do not see the need to have a birth plan. In addition, you find out that a woman cannot be seen in clinics unless her husband or another elder male accompanies her.

**Question:** What implications do these data have for your advocacy strategy and the message you will deliver to household decision makers?

### *Data Collection Scenario 2*

The Ministry of Health funds a surveillance survey in five hospital-based maternity wards. In your review of the findings, one of the hospitals showed an increase in maternal deaths compared with the prior two years. Hospital officials report that the sudden increase was due to more women from rural areas coming to the hospital to deliver, whereas in prior years these women would have delivered in their villages. However, rural women coming from the villages were often arriving with serious complications that at times were too late to manage.

**Questions:** How would your advocacy network use this information in setting priorities for an advocacy strategy? If your advocacy strategy is in place, how might this information modify your plans?

### *Data Collection Scenario 3*

Through informal interviews in a rural community, you find out that husbands are not encouraging their pregnant wives to deliver at the hospital because the cost of supplies is too high. The community was encouraged to develop a system with which to collect community funds so that at least women with complications could pay for the care they needed at local hospitals. Some men in the community, especially those whose wives were past their reproductive years or who were practicing family planning, were against contributing to the pool because their wives would never use these resources.

**Questions:** What data will you use to show that the entire community benefits from allowing its pregnant women to have access to such resources? How will you present your information in such a way that will promote solutions?

***Data Collection Scenario 4***

Currently, there is a shortage of OB-GYNS at the major referral hospital in your district. Your network knows that there are many capable midwives that can be trained to manually remove placenta after delivery or perform emergency vacuum extractions. The Ministry of Health needs to be convinced that these midwives can be trained to handle the cases needing such services at the referral hospital.

***Questions:*** What data do the network need to convince the ministry this solution to the shortage is a viable one? How could it obtain the data?

## Maternal Health Handout III.5.4

## Interview Topic Guide

*Purpose of research: To learn what community members think about having a healthcare worker educate the community about danger signs during pregnancy and childbirth.*

### I. Introduction

- A. Explain who you are and the purpose of your research.
- B. Explain the procedure (e.g., I would like to ask you some questions; I would like about 15 minutes of your time).
- C. Emphasize that there are no right or wrong answers to the questions you will ask.
- D. Ask the respondent's name and how many children he/she has and their ages.

### II. Rapport Building (Opening conversation to set a comfortable tone) Ask the respondent something general and appropriate about his/her family, children, work, or community (e.g., how old are her children).

### III. In-Depth Discussion (Sequence the questions by moving from questions that seek factual information to questions that require the respondent's opinion.)

- A. Sample questions:
  - 1. What do they know about the danger signs associated with pregnancy and childbirth?
  - 2. Has anyone educated the community before about danger signs during pregnancy and childbirth?
  - 3. Would they like a health care worker to come talk to them about the danger signs?
  - 4. Do they think that knowing about the danger signs would help the community seek care if these signs were to present themselves?
- B. Be prepared to follow up with probing questions to clarify or explore further.

### IV. Closure

- A. Briefly summarize what you have heard and ask for the respondent's final reaction (e.g., is there anything that we did not discuss that you would like to add?).
- B. Thank the respondent for his/her time.

### V. Review and Organize Interview Notes

## Secondary Data Analysis

### Group 2: Antenatal Care-Table A

Number of antenatal care visits and stage of pregnancy  
Percent distribution of live births in the past five years by number of antenatal care visits  
and by stage of pregnancy at time of the first visit.  
(Data from Tanzania Demographic and Health Surveys (TDHS))

Number and timing of antenatal care visits	TDHS 1991-1992	TDHS 1996	TDHS 1999*
<b>Number of visits</b>			
None	3.6	2.1	2.4
1	1.1	1.5	2.9
2-3	23.5	22.5	23.1
4+	69.5	69.5	69.9
Don't know/missing	2.4	4.4	1.6
Total	100%	100%	100%
Median**	5.0	3.9	4.1
<b>Number of months pregnant at first visit</b>			
No antenatal care	3.6	2.1	2.4
<6 months	60.1	60.5	61.4
6-7 months	34.0	34.7	32.0
8+ months	1.7	1.7	2.9
Don't know/missing	0.5	1.0	1.2
Total	100%	100%	100%
Median	5.6	5.6	5.5
Number of births	8,032	6,916	2,183

\*Refers to most recent birth only

\*\* For those with antenatal care

Group 2: Antenatal Care-Table B  
Antenatal Care Content

Among women who have had births in the five years preceding the survey, percentage of the most recent births for which specific antenatal care was received, by content of antenatal care, and selected background characteristics.

Background	Informed of pregnancy complications	Has a card with immunizations	Give/bought iron tablets	Given/bought anti-malarials	Number of births
<b>Mother's age at birth</b>					
<20	33.2	39.3	45.4	23.0	368
20-34	43.0	40.7	45.4	34.7	1,486
35+	42.2	33.2	38.8	32.5	329
<b>Birth order</b>					
1	37.6	38.2	45.9	33.2	498
2-3	42.2	43.4	47.0	30.0	719
4-5	44.0	41.4	44.1	35.9	479
6+	41.1	32.6	39.5	31.7	487
<b>Residence</b>					
Urban	52.6	37.0	49.8	41.9	502
Rural	37.9	40.0	42.8	29.6	1,681
<b>Mother's education</b>					
No education	28.9	33.8	36.8	26.7	581
Primary incomplete	41.2	38.6	43.6	27.5	370
Primary complete	46.2	42.5	86.3	47.5	1,143
Secondary+	58.6	37.2	86.5	58.6	89
<b>Total</b>	41.3	39.3	44.4	32.4	2,183

**Group 3: Skilled Attendance at Birth-Table A**  
**Place of Delivery**

Percent distribution of births in the five years preceding the survey by place of delivery, according to selected background characteristics.

Background	Health facility	Home	Don't know/missing	Total (%)	Number of births
<b>Mother's age at birth</b>					
<20	54.0	46.0	0.0	100	575
20-34	43.9	55.8	0.3	100	2,286
35+	27.1	72.6	0.2	100	422
<b>Birth order</b>					
1	59.9	40.0	0.0	100	769
2-3	46.6	53.3	0.1	100	1,100
4-5	38.3	61.2	0.5	100	715
6+	25.8	73.7	0.5	100	698
<b>Residence</b>					
Urban	82.8	17.2	0.1	100	614
Rural	34.5	65.3	0.3	100	2,668
<b>Mother's education</b>					
No education	24.4	75.2	0.4	100	907
Primary incomplete	44.2	55.7	0.1	100	548
Primary complete	51.0	48.7	0.2	100	1,711
Secondary+	78.8	21.2	0.0	100	116
<b>Total</b>	43.5	56.3	0.2	100	3,282

**Group 3: Skilled Attendance at Birth-Table B**  
**Assistance During Delivery**

Percent distribution in the five years preceding the survey by type of assistance during delivery, according to selected backgrounds.

Background	Doctor	Nurse/ Midwife	Rural medical aide	MCH aide	Village health worker	Trained birth attendant	Traditional birth attendant	Relative/ Other	No one	Don't know/ Missing	Total (%)	Number of Births
<b>Mother's age at birth</b>												
<20	9.8	33.2	4.8	5.4	3.0	8.1	5.7	27.6	2.5	0.0	100	575
20-34	7.0	29.5	2.3	5.6	1.6	11.3	7.3	28.1	6.9	0.3	100	2,286
35+	6.5	16.0	2.0	3.1	1.3	12.6	5.6	39.2	13.8	0.0	100	422
<b>Birth order</b>												
1	11.5	38.5	5.2	3.9	2.4	7.3	6.8	23.0	0.8	0.4	100	769
2-3	7.5	31.4	2.2	6.3	1.6	12.0	6.1	27.9	4.8	0.1	100	1,100
4-5	6.6	25.1	0.8	6.0	2.0	12.4	7.0	30.9	8.8	0.5	100	715
6+	3.7	16.1	2.6	4.3	1.3	11.4	7.5	37.5	15.5	0.1	100	698
<b>Residence</b>												
Urban	16.6	60.1	3.5	3.1	0.7	6.1	2.4	6.0	1.1	0.4	100	614
Rural	5.3	21.1	2.5	5.8	2.1	12.0	7.8	34.8	8.4	0.2	100	2,668
<b>Mother's education</b>												
No education	5.3	14.1	2.0	4.0	1.4	7.7	8.2	46.5	10.4	0.3	100	907
Primary incomplete	5.1	28.7	3.0	6.4	1.9	10.8	5.1	30.6	8.1	0.1	100	548
Primary complete	8.4	33.8	3.1	5.9	2.1	12.9	6.4	21.6	5.3	0.0	100	1,711
Secondary+	20.0	59.6	0.9	0.9	0.0	5.4	8.9	4.1	0.1	0.1	100	116
<b>Total</b>	7.4	28.4	2.7	5.3	1.8	10.9	6.8	29.4	7.0	0.2	100	3,282

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## Measuring Maternal Mortality

The Tenth International Classification of Diseases (ICD-10) defines a maternal death as “the death of a woman while pregnant or within 42 days of the termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.” Maternal deaths are often misclassified and underreported; therefore, it is difficult to obtain an accurate assessment of the true level of maternal mortality in a given setting. The following table describes various methods of measuring maternal mortality.

Method	Description
<i>Household Survey*</i>	Household surveys using direct estimation require very large sample sizes to provide reliable and representative results. Confidence intervals are wide and resulting indicators can be imprecise.
<i>Vital Registration*</i>	Data on births and deaths in developed countries are collected through vital registration and medical certification of causes of death. Vital registration systems in developing countries are often incomplete.
<i>Population Census Data**</i>	The national population census is a feasible and promising approach for measuring maternal mortality.*
<i>Sisterhood Method*</i>	This is an indirect survey method involving asking women of reproductive age a series of questions about the survival of all their adult sisters. This questionnaire is usually added to an existing household survey making the method cost-effective. Estimates generated by the sisterhood method generally apply to a period 10-12 years prior to the study. A more recent derivation used in Demographic and Health Surveys (DHS) can produce an estimate that applies to a more recent period, but requires a larger sample size.
<i>Reproductive Age Mortality Surveys (RAMOS)*</i>	These surveys are in-depth reviews of deaths among all women of reproductive age. The results yield data on the maternal mortality ratio, causes of death, high-risk groups, and avoidable factors. They are complex and costly to conduct. Only 10 developing countries have used RAMOS to date.
<i>WHO/UNICEF Estimates*</i>	This method was used to estimate maternal mortality for the year 1990. The method involves adjusting existing estimates to account for underreporting or misclassification and using a model to generate an estimated figure for places without existing estimates. The model relies on fertility rates and proportion of births that are assisted by skilled personnel.

Method	Description
<i>Verbal Autopsy*</i>	The tool is a structured questionnaire administered to family members of mothers or infants who have died. Questions are asked to review the circumstances surrounding the death of a woman of reproductive age or the death of a child in the peri/neonatal period determine the cause of death as well as on other variables such as socioeconomic status, number of previous births, education-level nutritional status, and the process of care seeking and decision making before death.
<i>Maternal Death Audit***</i>	A maternal death audit consists of regular meetings of midwives, staff from health centers, health administrators, and hospital physicians to discuss maternal and perinatal deaths. Community involvement is invited if considered desirable. The background of a designated number of cases and chronology of events leading to the death are presented. Participants then review and discuss case management in order to improve future outcomes.

Notes:

\*WHO. 1998. "Measure Progress." In *World Health Day: Safe Motherhood 7 April 1998 Information Kit*.

\*\*Stanton, C., J. Hobcroft, K. Hill, N. Kodjogbé, W.T. Mapeta, F. Munene, M. Naghavi, V. Rabeza, B. Sisouphanthong, and O. Campbell. 2001. "Every Death Counts: Measurement of Maternal Mortality via a Census." In *Bulletin of the World Health Organization* 79(7): 657-664.

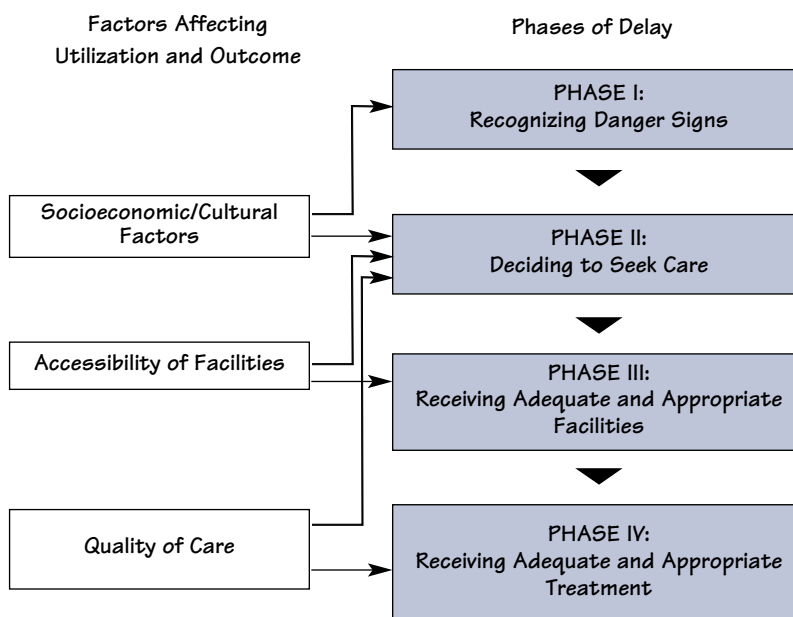
\*\*\*Supratikto, G., M. Wirth, E. Achadi, S. Cohen, and C. Ronsmans. 2002. "A District-based Audit of the Causes and Circumstances of Maternal Deaths in South Kalimantan, Indonesia." In *Bulletin of the World Health Organization* 80(3): 228-235.

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## The Four Delays Model

Prevention and timely treatment of complications can effectively reduce maternal morbidities and mortalities. Maine et al. (1997) developed the “Three Delays Model,” which groups delay-related barriers to obtaining emergency obstetric services into three major categories. This model can be instructive in assessing and evaluating the most urgent barriers to adequately responding to emergency obstetric complications in a particular setting. These three delays are: 1) delay in seeking care, 2) delay in reaching a treatment facility, and 3) delay in receiving adequate treatment at a facility. Ransom and Yinger (2002) expand on this model by dividing the first delay into two: 1) delay in recognizing danger signs, and 2) delay in seeking care.

- The **delay in recognizing danger signs** is influenced by recognizing that there is a problem (life threatening complication).
- The **delay in deciding to seek care** is influenced by knowing where to go for help and having the ability to do so.
- The **delay in reaching a medical facility** is influenced by the accessibility of the health facility, availability of services within the health facility, transportation, and associated costs.
- The **delay in receiving treatment** is influenced by the condition of the facility; sufficient staff, drugs, and supplies; and management of the facility.



Sources: Maine, D., M.Z. Akalin, V.M. Ward, and A. Kamara. 1997. *The Design and Evaluation of Maternal Mortality Programs*. New York: Columbia University, Centre for Population and Family Health, School of Public Health. Ransom, E. and N. Yinger. 2002. “Making Motherhood Safer: Overcoming Obstacles on the Pathway to Care.” MEASURE Communication Policy Brief. Washington, D.C.: Population Reference Bureau.