INTRODUCTION TO THE MATERNAL AND NEWBORN QUALITY OF CARE SURVEYS

1. BACKGROUND

Improving the quality of obstetric care in facilities has recently been identified as a neglected and essential approach to reducing maternal deaths and enabling developing countries to achieve Millennium Development Goal (MDG) 4 and 5.[1] Postpartum hemorrhage is the most frequent cause of maternal deaths globally and in developing countries, accounting for 25% of maternal deaths. Next are hypertensive disorders in pregnancy (PE/E) at 15%, sepsis (8%) and obstructed labor (7%).[2] Effective interventions exist for screening, preventing and treating obstetric and newborn complications, and they can be readily provided by skilled providers in facilities. However, achieving both high quality and coverage of these interventions is essential in order to reduce maternal and newborn deaths globally. International evidence suggests that the most important factor in reducing maternal and early neonatal mortality is the attendance of a skilled birth provider. But not all "skilled birth attendants" are actually skilled. In fact, the quality of the care provided by skilled birth attendants is often unknown.

Two major survey efforts have been undertaken to assess the quality of care in health facilities in the developing world. Columbia University's Averting Maternal Deaths and Disabilities (AMDD) Program, in partnership with the United Nations (UN) and the United Nations Children's Fund (UNICEF), developed an obstetric care facility assessment. ICF International developed the Service Provision Assessment (SPA) survey, which has been applied in a number of countries. Both of these instruments assess aspects of facility readiness related to provision of quality maternal care, including number and type of health providers and availability of equipment and medical supplies.

MCHIP developed its maternal and newborn QoC survey to complement and build on these facility surveys. MCHIP and USAID first decided to develop a health facility survey toolkit with the idea of focusing on pre-eclampsia/eclampsia screening and treatment. Realizing that there is a need to assess broader issues related to quality of maternal health care, MCHIP decided to expand the survey to include all labor and delivery (L&D) practices. The survey draws on the survey model implemented in ten countries by the Prevention of Postpartum Hemorrhage Initiative (POPPHI) project.[3] The POPPHI survey results successfully motivated policy and programmatic change efforts to increase the use of AMTSL and reduce PPH. The major added value of the QoC surveys is that it includes direct observation of care using structured, standardized clinical observation checklists in both ANC and L&D care. QoC surveys are being conducted in multiple countries, both as a stand-alone instrument and as part of other survey efforts such as the SPA.

The purpose of the survey is to generate information to quantify the need for and guide the content of quality improvement activities for maternal and newborn care at facility, district, and national levels through documentation of the appropriate use, quality of implementation, and barriers to performance of key preventive, screening and treatment interventions during

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[1] Van den Broek NR and Graham WJ. 2009. Quality of care for maternal and newborn health: The neglected agenda. *BJOG* 116 (Suppl 1): 18–21.

[2] Khan K et al. 2006. WHO analysis of causes of maternal death: A systematic review. *Lancet* 367: 1066–1074.

[3] Stanton C, Armbruster D, Knight R, Ariawan I, Gbangbade S, Getachew A, *et al.* Use of active management of the third stage of labour in seven developing countries. *Bull World Health Organ* 2009, 87(3): 207-215.

facility-based maternal and newborn care. The definition of "quality" as applied to the practices assessed is that they are correctly carried out based on globally accepted, evidence-based guidelines. The ultimate aim is to contribute to the reduction of frequent, preventable maternal and newborn deaths through increased use and quality of known life-saving interventions.

2. STUDY OBJECTIVES

The main objective of this multi-country study is to determine the frequency and quality of interventions that address common direct causes of maternal and newborn deaths in developing countries, using globally accepted, evidence-based guidelines delineated in the World Health Organization's manual, *Managing Complications in Pregnancy and Childbirth,* which is part of the *Integrated Management of Pregnancy and Childbirth* series (IMPAQ).[4] For pregnant women, these complications include PE/E, PPH, prolonged/obstructed labor and sepsis; for newborns, the main complication is birth asphyxia. The obstetric and neonatal care interventions assessed include screening and management of PE/E, use of AMTSL, use of the partograph, treatment of PPH, infection prevention, and essential newborn care and resuscitation.

Secondary study objectives include the following:

1. Provide baseline estimates on compliance with globally accepted standards for clinical practice in ANC and L&D. The interventions assessed include prenatal history taking and birth preparedness counseling; screening, prevention, and point estimates of treatment of severe PE/E and PPH; prevention of PPH through the use of AMTSL; prevention and management of prolonged/obstructed labor through the use of the partograph; prevention of puerperal sepsis through IP practices; and immediate essential newborn care practices.

2. Provide qualitative information on the quality of management of PE/E, PPH and newborns with asphyxia.

3. Assess three sets of factors related to quality of care:
    a. Health provider knowledge of evidence-based practices
    b. Facility readiness to provide care with respect to infrastructure, supplies and medications
    c. The national policy environment

4. Develop indicators and data collection tools for use in multiple countries.

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[4] World Health Organization. 2003. *Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors.* WHO: Geneva.

3. METHODOLOGY

3.1 DATA COLLECTION METHODS AND TOOLS

A total of five tools were used to gather data and conduct observations. Three of the tools—the facility inventory, ANC observation checklist and health provider interview guide/knowledge test—were developed as part of the original SPA toolkit for Kenya, and MCHIP revised data elements/questions to these tools. MCHIP developed an additional observation checklist for observing normal vaginal births as well as births with the following complications: PPH, PE/E, and newborn asphyxia, and a national policy and drugs interview guide. Each of the tools is described below.

Antenatal Care and Labor and Delivery Observation Checklists

A set of concise, structured clinical observation checklists was used for observation of ANC consultations and vaginal deliveries in selected facilities. The content of the checklists is based on the World Health Organization's IMPAC manual and guidelines for screening for PE/E in ANC and L&D; management of PE/E and PPH; routine and correct use of the partograph; routine and correct use of AMTSL; IP behaviors; provider-client interaction/communication; correct essential newborn care and newborn resuscitation. Client background information collected includes age, gravidity, and parity. The tool also captured the qualifications of the provider and level of care provided by the health facility (tertiary care, hospital, health center, etc.). The forms are adapted from the Jhpiego ACCESS Program's *Best Practices in Maternal and Newborn Care: Learning Resource Package on Best Practices in Maternal and Newborn Care.*[5] The routine labor and delivery clinical observation checklist was adapted from the instrument used by POPPHI in their survey on AMTSL.

Health Care Worker Interview Guide/Knowledge Test

The first section of the tool collects information from health workers on clinical qualifications; training and experience providing ANC, L&D, and newborn care services; and supervision. The second half of the tool is composed of questions that test the provider's knowledge on how to identify, manage, and treat common maternal and newborn health complications, including obstructed labor, PPH and sepsis. A clinical case study was used to assess provider knowledge and clinical decision-making pertaining to management of severe PE/E and newborn resuscitation skills were assessed through a simulation. When possible, health workers who were observed providing ANC or L&D services also completed the health worker interview.

Record Review

This tool captured the number of ANC consults, deliveries, births, deaths and obstetric complications at each facility for the last year from locally maintained registries. The design of

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[5] ACCESS. 2008. *Best Practices in Maternal and Newborn Care; A Learning Resource Package for Essential and Basic Emergency Obstetric and Newborn Care.* Accessed on March 21, 2012, at: http://www.accesstohealth.org/toolres/pubs.htm

the tool was informed by the AMDD tool.[6] In addition, up to 24 individual patient charts from the previous three months were reviewed for partograph use, AMTSL, and essential newborn care.

Facility Inventory Tool

The facility inventory tool assesses infrastructure conditions and verifies the availability of and storage conditions for medications, supplies and equipment. The inventory was conducted once per facility and could include interviews with different health workers for the various sections of the tool. The availability of items was confirmed by observation (not reported).

National Policy and Drugs Interview Guide

A standardized questionnaire was completed based on a visit to the national drug depot and key informant interviews to identify relevant evidence-based practice guidelines in national policies; relevant medications on the national essential drug list or formularies; evidence-based content on L&D care, including PE/E treatment, in pre-service and in-service medical curricula/syllabi from the year preceding the study; and background statistics on maternal and newborn health (e.g., mortality) from existing sources such as the Demographic and Health Survey (DHS) and Health Information Systems (HIS).

3.2 SAMPLE

QoC Surveys have been conducted in 7 countries to date: Ethiopia, Kenya, Madagascar, Mozambique, Rwanda, Tanzania plus Zanzibar, and Zimbabwe. The goal for the global study was to observe at least 250 deliveries and 250 ANC consults in each country. For each survey, the Ministry of Health and MCHIP collaboratively decided whether to conduct a census of facilities, draw a random sample, focus on high-volume facilities, or use a combination of selection methods, depending on the total number of facilities, the number of facilities at each level (district hospital, hospital, health center, dispensary/health post), the average number of deliveries per day per facility, and logistical requirements.

Table 1. Sample of facilities, Labor & Deliveries, ANC consults, and health worker interviews for 6 countries with final data available.

	KENYA	ETHIOPIA	TANZANIA	ZANZIBAR	RWANDA	MADAG-ASCAR	MOZAM-BIQUE	TOTAL
Facilities								
-Hospitals	52%	100%	23%	56%	58%	75%	46%	53%
-Health Centers/ dispensaries	48%	0%	77%	44%	42%	25%	54%	47%
Total	409	19	52	9	72	36	46	643
Observations of Care								
Labor & Deliveries								
-Initial assessment	452	107	306	106	187	268	378	1804

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[6] Averting Death and Disability, Columbia University (AMDD). 2010. *Needs Assessment of Emergency Obstetric and Newborn Care. Data Collector's Manual.* AMDD: New York, NY.

-1st stage of labor	580	139	288	113	241	255	455	2071
-2nd & 3rd stage of labor	563	117	415	201	225	288	507	2316
-Newborn & postpartum care	571	115	419	203	225	336	508	2377
Total	626	192	489	217	293	347	525	2689
Complications								
-Newborn resuscitation	42	18	37	12	44	49	28	230
-Pre-eclampsia/ eclampsia	10	9	11	1	0	10	9	50
-Postpartum hemorrhage	32	11	11	1	4	15	6	80
ANC consults								
Total	1409	126	391	57	311	323	303	2920
Health Workers Interviewed								
Total	249	79	206	51	146	140	186	1057

3.3 TRAINING AND DATA COLLECTION

Skilled providers (medical doctors, midwives and nurses) in each country were trained as data collectors for the surveys over a period of 1-2 weeks. The training included briefings on the background and rationale of the study, a description of the research tools, and technical instructions on using a Windows Mobile/HTC smartphone or Samsung Galaxy Tablet for data collection. The trainees also had an opportunity to go to the field and practice using the smartphones for data collection. Their clinical observations skills were standardized before the data collector training session.

Data collectors generally worked in teams of three to four people, with one person acting as team leader and taking responsibility for logistics. Each team spent two to three days at each facility, depending on the availability of cases. The team arrived at each facility early enough to attend the morning staff meeting and explain the process of the study.

3.4 DATA ENTRY AND ANALYSIS

Survey data was recorded by data collectors on smartphones using custom-created data entry programs developed with the PocketPC Creations software package running on a Windows mobile platform. Logic, skip and consistency checks were built into the programs. Data collectors were trained to review records for missing or inconsistent answers before submission. Depending on local capabilities, the data from each handheld device was either uploaded directly to a central database at the end of each day or backed up to a secure digital card to be uploaded when the data collectors returned from the field. At the end of the data collection period, all of the data files were linked and merged into a central database. After data cleaning, the MCHIP team in Washington, DC generated a standard set of online tables and graphs using a custom-designed ColdFusion backend. Additional analysis was carried out using SPSS or Stata software for variables that were not included in the program used to generate the standard sets of online tables.

Facility weights were used to adjust the results from labor and delivery observations when the number of cases during the observation period at a given facility differed from the expected case load. The expected number of observations per day for each facility was calculated based on data collected with the record review tool. When the number of cases at a given health facility fell below that estimate, the results were adjusted upward. If more deliveries were observed than had been expected, based on the daily rate for that facility, the results were adjusted down. Only data from the labor and delivery observation tool were weighted; the results of the antenatal care observations, health worker knowledge tests and facility inventory were used as collected. Observations of maternal and newborn complications (PE/E, PPH and newborn resuscitation) were not weighted because data were only used qualitatively.

3.5 ETHICAL REVIEW

The study protocol was submitted to and approved by the ethical review boards in all survey countries and partner ICF. In the United States, the institutional review board of Johns Hopkins Bloomberg School of Public Health (JHSPH) ruled the protocol exempt from review under U.S. federal code 45 CFR 46.101(b), Category (5). Informed consent was obtained from all study participants, including facility directors, health workers, and patients. In limited cases, consent was obtained from next of kin when a woman was either too ill or unconscious and unable to give consent.