

RATIONAL PHARMACEUTICAL MANAGEMENT PROJECT

**THE COST ESTIMATE STRATEGY (CES)
FOR IMPROVING
THE AVAILABILITY AND USE OF
REPRODUCTIVE HEALTH COMMODITIES**

KENYA FIELD TEST REPORT

AUGUST 25, 1998

*All observations expressed in this report are preliminary pending
the review and an approval by the Kenyan authorities*

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LIST OF ACRONYMS

ANC	Antenatal Care
ASTGs	Adjusted Standard Treatment Guidelines
CES	Cost Estimate Strategy
EPI	Extended Program on Immunizations
FIF	Facility Improvement Fund
HIS	Health Information System
ICPD	International Conference on Population and Development
IMRES	Institute for Medical Relief Services
IPA	International Procurement Agency
IV	Intravenous
KSh	Kenyan Shillings
LA/C	Latin America and the Caribbean
MEDS	Mission for Essential Drugs and Supplies
MOH	Ministry of Health
NGO	Non-Governmental Organization
OB/GYN	Obstetrician/Gynecologist
PID	Pelvic Inflammatory Disease
RH	Reproductive Health
RPM	Rational Pharmaceutical Management
STGs	Standard Treatment Guidelines
STIs	Sexually Transmitted Infections
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UTI	Urinary Tract Infection
WHO	World Health Organization
SD	Standard Deviation

Executive Summary

Half a million women in developing countries die every year without access to safe, effective, affordable, and acceptable reproductive health (RH) services (United Nations [UN], 1995). The recommendations of the International Conference on Population and Development (ICPD) in Cairo in September 1994 called for action to reduce maternal morbidity and mortality. Governments and donor agencies are responding to the ICPD by supplying commodities, i.e., pharmaceuticals, medical supplies, and basic equipment, necessary for improving women's RH care. However, this assistance is being provided without the benefit of information necessary for determining the cost and quantities of commodities required by new or expanded RH programs.

In response to this need for a systematic approach to assess supply requirements for adequate RH services, the Cost Estimate Strategy (CES) has been developed by the Rational Pharmaceutical Management (RPM) project and the MotherCare project, both funded by the United States Agency for International Development (USAID). This report presents the results from the CES field test that was conducted in Kenya in 1997.

The field test consisted of six study components. Data were collected through document reviews, interviews, and surveys at central, facility, and retail pharmacy levels. Spreadsheets were developed based on the Kenya Standard Treatment Guidelines (STGs) and local commodity cost information. Local experts in reproductive health, as well as major suppliers, were contacted during this process. Epidemiologic and health service utilization data were also collected. Fifty-six health care facilities and 98 pharmacies were surveyed.

The field test demonstrated that the CES approach provides a useful framework and tools for assessing RH commodity needs to improve RH services. The approach identified a gap between recommended and actual practices, and between needs and the availability of basic drugs, medical supplies, and equipment for RH services across the sectors and the levels of services in Kenya. Costs for RH commodities using local Kenya prices were found to be lower than the international prices, although we were not able to obtain price information from the government sector. The total financial requirements for RH drugs and supplies were estimated to exceed the government's total budget currently allocated to drugs for all services, if the treatment norms are to be implemented at all facilities. Further examinations of the factors influencing the estimated total costs for RH services are necessary, with a clear understanding of the system and practices in Kenya. The critical evaluation of the appropriateness of the recommended treatment guidelines will benefit from the findings of the field test.

The field test's findings have already been used to improve the CES approach and tools. In particular, the CES Spreadsheets were substantially refined. Different case mixes and treatment choices can now be taken into account in making cost estimates. All relevant parts of the Spreadsheets are now linked so that any changes in the selection of drugs and medical supplies and their use are linked to and reflected in the resulting aggregate costs estimated. Epidemiologic and service utilization data are also integrated with the costing process within the Spreadsheets. The prototypes of the data collection instruments and the data analysis program were also further developed and refined.

In order to make the CES approach and tools even more user-friendly and practical, RPM will explore ways to package them for small clusters of activities. Also, based on the results from the field test, we will examine ways to make the tools accessible to various users, including the development and testing of the CES Guide.

The report begins with the background and description of the CES and the field test objectives and methodology. It then discusses the results from the field test and implications for the CES as a tool. The report also lists recommendations and the next steps for the project.

I THE COST ESTIMATE STRATEGY

Half a million women in developing countries die every year without access to safe, effective, affordable, and acceptable reproductive health services (UN, 1995). The International Conference on Population and Development in Cairo in September 1994 called for actions to reduce maternal morbidity and mortality. In response, governments and donor agencies have been supplying commodities (i.e., pharmaceuticals, medical supplies, and basic equipment) necessary for improving women's RH care. However, this assistance is being provided without the benefit of information necessary for determining the cost and quantities of commodities required by new or expanded RH programs.

In 1995, representatives from USAID Office of Health and Nutrition, the Rational Pharmaceutical Management (RPM) project and the MotherCare project formed the "RH Working Group" to develop a tool that would provide the donor community, governments, and RH program managers with appropriate methods and information to estimate the cost of supplying needed RH commodities. This effort resulted in the Cost Estimate Strategy (CES). The CES guides step-wise decision-making. It is designed to identify ways to improve the availability and management of reproductive health drugs and supplies at different levels in the health care system. The CES tools provide the framework for using cost information for policy-making, as well as for planning purposes based on cost and quality of care standards for the specific country, district, or services being considered for upgrade and/or expansion.

The CES consists of three components: the **normative cost estimate**, based on international standard treatment guidelines and prices, the **country-specific cost estimate**, based on local epidemiologic and service utilization data, and commodity prices, and the **actual cost estimate**, as a result of a survey of observed prescriber and consumer behavior and of the performance of public and private drug management and supply systems.

Normative RH cost estimate In spreadsheet format, all of the drugs, medical supplies, and equipment required for basic RH services are itemized and costed, in accordance with World Health Organization (WHO) and other internationally recommended treatment guidelines and UNICEF prices. Spreadsheets are developed for each RH condition and service to be evaluated. The spreadsheets contain information on drugs and medical supplies, equipment requirements, and their prices in the international market.

Country-specific RH estimate Relevant treatment information from local standard treatment guidelines and prices are entered into a spreadsheet in the same format as above. This allows for input from informed local RH care providers in terms of information about the prevalence of antibiotic resistance, average duration of treatments and the severity of RH episodes, local treatment guidelines, commodity prices, and local profit margins or cost-sharing rates in the private sector.

Actual RH cost estimate Data on drug and supply availability, costs, and use of RH commodities in actual day-to-day practice are collected through a structured survey. Sources of these data include treatment records, commodity supply and procurement records, interviews with health care providers and women receiving RH services, and simulated purchase surveys at retail pharmacies. These data are analyzed through the Epi Info Software program.

II THE KENYA CES FIELD TEST

The Safe Motherhood Initiative was launched in Kenya in 1987. However, several RH problems still represent leading causes of mortality and morbidity among women of reproductive age. In addition to the high level of demand, Kenya's reproductive health services are facing numerous challenges, such as reduced government financing and increasing out-of-pocket expenditures for women, high HIV infection rates that require special protection and handling of supplies, and the need to improve efficiency in the health care service and supply system.

In October 1997, RPM launched the field test of the CES in Kenya. The primary objective of this field test was to assess the feasibility of the CES approach, and to the extent that it proved feasible, to determine ways to improve it as a practical management tool. A number of favorable conditions existed in Kenya for the field test of the CES. We felt that the health system in Kenya would allow for a rapid data collection period for the following reasons:

- Data about the public sector drug supply systems in Kenya are primarily centralized
- The private for-profit health sector in Kenya is mostly concentrated in urban areas and is therefore relatively accessible
- The mission health sector also has a separate central supply system, the Mission for Essential Drugs and Supplies
- The Ministry of Health (MOH) has published STGs and an Essential Drug List. Both are necessary for cost estimation purposes.

A Study Components

In Kenya, the CES field test involved the following activities:

- (a) Estimating local costs of treating selected RH conditions
- (b) Estimating local costs of medical equipment items needed to deliver the essential RH services
- (c) Examining variations in costs of RH commodities when purchased locally by health facilities or in private pharmacies
- (d) Examining availability of key RH drugs, medical supplies, and equipment items in government, mission, and private health facilities and in private pharmacies
- (e) Surveying reported RH treatment practices among government, mission, and private medical personnel and among private pharmacy personnel
- (f) Assessing actual RH treatment practices for key RH conditions by reviewing medical records at health facilities, treatment cards retained by pregnant or newly delivered mothers, or in simulated visits to private pharmacies

Different sources and methodologies of data and data collection were used to obtain the necessary information. Methods used included:

- Review of published documents and reports
- Special reports from computerized MOH Health Information System (HIS)
- A mini-survey of drug, medical supply, and equipment suppliers
- A stock survey and medical records review at government, mission, and private health facilities
- A stock survey and simulated purchase survey at private retail pharmacies
- Interviews with local key informants, health personnel staff at private pharmacies, women attending antenatal care (ANC) and newly delivered mothers

B Data Collection Instruments

Various data collection forms and corresponding instructions were developed for carrying out the CES. These were based on observations from the visit to a district hospital outside Nairobi and by reviewing existing data collection instruments used in the Family Care International Survey (Family Care International, 1997b). Survey forms used in the CES are included in Annex 3.

- *The Health Facility Survey* is divided into three sections (management, infrastructure and equipment checklist and drug and supply checklist) so that the data collection team can work in different parts of the facility simultaneously. Sample cases for the review of prescribing patterns were selected based on the *Procedures for Studying Patterns of Care*, and the information collected was recorded on the *Patient Contact Form*.
- *The Health Care Provider* questionnaire was conducted with a maximum of four staff per facility (physician, clinical officer, and two nurse midwives/nurses/midwives). Information on reported practices obtained from these interviews allowed us to cross-check information about actual practice patterns that were recorded in the medical records.
- *The Mothers' Interview* form and *Maternal History* form were intended to supplement each other for information regarding ANC services and labor/delivery.
- Some information about reported practices for ANC services at pharmacies collected through a *Pharmacy Survey* form were cross-checked by a *Simulated Purchase Survey*.

C Data Collectors

Central-level data were collected by external consultants. All health facility and pharmacy data were collected by two local teams, each consisting of a senior nurse-midwife from the MOH Division of Primary Health Care, a second nurse-midwife, and two graduate pharmacists. Each team was supervised by a local study field coordinator from the Faculty of Pharmacy of the University of Nairobi. The field coordinator had extensive experience in data collection at health facilities and supervised all aspects of study team training, field work, and data validation.

D Data Analysis

All data were analyzed using Epi Info Version 6.03, SAS or Quattro-Pro. The data on costs of RH treatments were analyzed using the CES Spreadsheets. For the RH conditions where sufficient data were available, the study team contrasted unit and aggregate treatment costs for each condition using procurement prices, local purchase prices, and retail prices. In addition, treatment costs for different RH conditions and services were compared between the Kenya STGs and common treatment patterns. The study team also compared STGs with reported and observed treatment practices at health facilities and in private pharmacies. Patterns of availability of drugs, supplies, and equipment were assessed at health facilities, and for key tracer drugs, supplies, and equipment, in private pharmacies. Finally, overall financial requirements of providing RH services in Kenya were estimated.

E Study Sites and Samples

Data were collected at the central level from reports, records, and the MOH data systems, at government, mission and private health facilities, and in private pharmacies in four districts and Nairobi. Four provinces (Nairobi, Central, Western and Nyanza) were selected for the study by the MOH to represent a range of conditions in the non-arid portions of rural Kenya. Within these districts, sample hospitals, maternity homes, and health centers were selected through a stratified random sampling method. First, all 16 districts from three provinces (excluding Nairobi) were listed, and divided into three categories:

- Three districts with high probability of good service (i.e., districts with a provincial hospital),
- Five districts with low probability of good service (i.e., relatively remote and poor districts), and
- Eight districts with medium probability of good service

One district from the first and second categories, and two districts from third category were randomly selected (Annex 4)

From a database maintained by the MOH Health Information System, sample sites for each category of facility (hospitals, maternity homes, and health centers) were randomly selected from the provincial list of facilities in the government, mission and private sectors. Dispensaries, which were also sampled in the districts outside Nairobi, were required to be administratively supervised by one of the previously sampled health centers and to provide a reasonable volume of RH services. Private pharmacies were randomly selected from those that were in the same geographic area as the hospitals included in the sample. The distribution of sample sites by sector and level of care is presented in Table One.

Table One Number of Facilities Included in the Sample by Sector and Level of Care

Sector	Hospital	Maternity Home	Health Center	Dispensary	Private Pharmacy
Government	6 ¹		24	8	
Mission	6		3	1	
Private	3	3	2		98 ²
Total	15	3	29	9	98

*1 including four MOH hospitals: one Nairobi municipal hospital and one parastatal hospital

*2 including 24 pharmacies with stock surveys and pharmacist interviews and 74 pharmacies with simulated purchase survey

Different numbers of patients with specific RH conditions were selected for sampling based on the level of care, as presented in Table Two

Table Two Target Sample Size per Sample Facility for Survey of Actual RH Treatment Practices by Condition and Level of Care

Condition	Dispensary	Health Center or Non-Referral Maternity Home	Hospital or Referral Maternity Home
Current ANC patients	5	5	5
Current deliveries		≤3	≤5
STI patients	10	10	10
Urinary tract infections		5	10
Deliveries (from records)		10	20
Caesarian sections			10
Maternal hemorrhage			5
Maternal sepsis			5

III RESULTS

A Setting up the CES in Kenya

The way in which the CES methodologies were applied to address each of the six study components is described below

1 Estimating local costs of treating selected RH conditions

a Selection of important RH conditions and services

The costs per case for the treatment of selected RH conditions and services were estimated using the treatments outlined in the Kenyan Standard Treatment Guidelines (STGs). In order to do this, the existing STGs were validated (and updated where necessary) by an expert advisory team of senior local nurses and obstetricians/gynecologists. For each of the RH conditions and services, the team reached a consensus on the adequacy of the treatment regimen described, including dosage and duration of the drugs of choice, and estimated the type and number of medical supply items needed to implement the treatment (medical supplies and equipment were not outlined in the STGs). Thus, adjusted STGs (ASTGs) were developed for the field test. A total of 22 important RH conditions and services covering ANC, delivery services, maternal and neonatal complications, and selected reproductive tract infections (Table Three), were reviewed and selected for this field test following this approach.

Table Three Selected RH Conditions and Services

1 Antenatal Care

- anemia iron/folic acid deficiency
- tetanus immunization*
- syphilis screening
- malaria screening and treatment

2 Maternal and Infant Birth Package

- safe and clean delivery
- hypothermia prevention
- ophthalmia neonatorum prevention
- newborn immunization* (first dose of BCG and polio)
- asphyxia early treatment

3 Maternal and Neonatal Complications Related to Pregnancy and Delivery

Infections

- neonatal sepsis
- maternal sepsis
- mastitis
- urinary tract infection

Other Complications

- pre-eclampsia/eclampsia
- complications of incomplete abortion
- dysfunctional labor
- Cesarean-section for obstructed labor
- perineal/cervical lacerations
- hemorrhage

4 Reproductive Tract Infections

- genital ulcer disease (syphilis)
- gonorrhea/chlamydia
- pelvic inflammatory disease

(*Note vaccines are provided through the EPI program)

b Determination of local prices

Given drug and supply requirements as per the Kenyan ASTGs, a local procurement price needed to be determined for each item (generally equivalent to a wholesale price plus fixed administrative markup). Because the Kenyan MOH procures its drugs and supplies for health facilities in drug kits at a single tendered price for all items included, it was impossible to identify the individual unit prices paid for each product. However, most drugs and supplies in the ASTGs are also supplied by the Mission for Essential Drugs and Supplies (MEDS). MEDS operates a large, centralized, low-cost procurement system to service mission facilities, so their list prices formed the basis of the procurement price estimates. In addition, data for drugs, expendables and equipment in the ASTGs were requested from Pharmaciens Sans Frontieres and added to the database.

The price list for reproductive health expendables and equipment was also requested from ten private suppliers. Seven of the ten suppliers that were contacted completed the unit cost forms by providing wholesale costs that include transport to Nairobi. Where VAT tax (16%) applied to the item, this was added. The median unit cost from all of the suppliers was taken as the unit cost for drugs, expendables, and equipment. Not-for-profit suppliers provided the unit cost information for drugs and some expenditures. For-profit suppliers provided unit cost information for other expendables and most equipment.

Costs per episode of RH conditions included in the field test were calculated by using the median prices for drugs and medical supplies and applying these to treatment regimens recommended by the Kenyan STGs. Some assumptions were made, where necessary, on the proportion of patients receiving different treatment options based on the available information.

c Total costs of treatment

Once costs per case were calculated for each selected RH condition, the total costs for treating different national populations of women experiencing these conditions could be calculated. Two populations of interest were (1) all women who experienced the condition in the community (underlying epidemiologic need), and (2) women who sought treatment in government facilities (current public sector treatment need).

Community-based estimates of the underlying epidemiologic need for most RH conditions (e.g., pre-eclampsia, or post-partum hemorrhage) are very difficult to obtain, except through detailed epidemiologic surveys. Some gross estimates of current treatment needs for some conditions are available from reports of population-based surveys (particularly the 1993 Demographic and Health Survey and the 1994 Maternal Mortality Survey). Assumptions about the number of cases in the community and in public facilities can be found in Annex 2-Part 3. Although the MOH Health Information System can be used to estimate current public sector treatment needs using statistics on inpatient and outpatient utilization by diagnosis (for the subset of RH conditions covered in these systems), the reporting in these systems is relatively haphazard. Because of the weaknesses in available data sources, any estimates of system-level resource requirements for drugs and supplies resulting from this field test should be considered quite tentative.

These data were entered into the CES Spreadsheets. The resulting costs by ASTG are presented in Annex 2-Part 4. The table shows the weighted cost per case treated, where weights are assigned according to the estimated proportion of cases treated with different options, the costs of standard treatments in the community, calculated as the product of the weighted cost per case treated and the number of cases assumed in the community, and the costs of standard treatments in public facilities, calculated as the product of the weighted cost per case treated and the number of cases assumed to be seen in public facilities.

2 Estimating local costs of medical equipment

In addition to drugs and supplies, particular items of medical equipment are required to manage different RH conditions. The local expert team first agreed on which pieces of equipment are required to manage the types of cases seen at each level of care, from primary care to referral hospital, these items are organized in packages by level of service. Prices were then estimated for these items by taking the median price reported for each item in a mini-survey of Nairobi medical equipment suppliers. The original list of equipment for surgical complications of pregnancy was based on international recommendations and was significantly expanded during the study. These changes were necessary to reflect the type of equipment commonly used in Kenya and as a result of a thorough review process of equipment. This review was done through discussions with officials and health care professionals in Kenya and observations of actual practices. Because of these changes, however, we were not able to collect comparable prices of some items in the international market.

Current public sector treatment need was subsequently estimated by making assumptions about how many sets of each equipment package are required per primary care facility, or in hospitals, per treatment area (e.g., antenatal clinic, delivery room, maternity ward, operating theater). For example, the number of units of each item in one set of labor and delivery area equipment package was determined by estimating equipment requirements per two delivery beds. We assumed that a medical facility with four delivery beds should have two sets of labor and delivery equipment packages according to this formula. Similar formulas were developed for equipment packages for antenatal and postnatal areas using ten antenatal and postnatal beds as the basic units for estimating equipment requirements, respectively. The number of units for the equipment package for the maternity surgical area was determined per maternity surgical theater (See Annex 2-Part 2).

Local costs for these equipment packages were then calculated using the median equipment prices obtained from Kenyan suppliers as described above. Finally, the total equipment requirements for all medical facilities in Kenya and in the public sector were estimated based on the number of facilities offering RH services.

3 Examining variations in purchase costs of RH commodities

Drugs, medical supplies, and equipment in Kenya are most often obtained by regular procurement from the MOH (in the case of government facilities) or MEDS (for mission facilities). However, private facilities are unable to participate in these procurement systems and must purchase these items on the local market. In addition, drugs and supplies are sometimes purchased locally by all facilities either during stockouts or through planned supplementary purchases under the Facility Improvement Fund (IF) using cost-sharing revenues.

a Local purchase prices

During the health facility survey, data were sought from pharmacists, procurement officers, or facility administrators on any local purchases of target drugs, medical supplies or equipment during the previous 12 months. Median local purchase prices were computed for items frequently purchased locally. These median prices were contrasted with central procurement prices. It was assumed that these responses included both MEDS prices, which were paid by mission facilities, as well as wholesale or retail prices that would have to be paid to suppliers. The responses from the sample facilities were analyzed to determine the median price paid for any drug or supply item. The number of facilities responding for any single item ranged from one to 12, with the average number of six to eight facilities responding for any item. This price information was entered into the CES Spreadsheets in the same fashion as the Kenyan prices in the previous stage. The resulting costs according to ASTG and aggregated costs are discussed in Section III-B, below.

b International prices

Information about the international prices of the reproductive health drugs, supplies, and equipment, based on the standard treatment guidelines for Kenya, was collected from three sources: UNICEF Supply Catalogue (1997), IPA (International Procurement Agency), and IMRES (Institute for Medical Relief Services).¹ The median price was taken from these three sources, 20% was added for customs, insurance and freight, and the resulting total was entered into the CES Spreadsheets in the same fashion as the Kenyan and facility prices mentioned above. For the resulting costs per standard treatment guideline, and aggregate costs for treatment of cases in the community and in public facilities, see Annex 2-Table C.

c Retail prices

A purchase price comparison analysis was also conducted using retail prices for key tracer drugs and medical supplies obtained during the retail pharmacy survey and in interviews with recently delivered mothers. These prices are relevant because drugs that are out of stock at health facilities frequently need to be purchased at local retail pharmacies by women or family members during episodes of labor, birth, or treatment of complications. Again, median prices were used in the price comparisons. [Note: These results will be included in the final report which will be available in March 1999.]

4 **Examining availability of key RH drugs, medical supplies, and equipment**

Different RH conditions and services are managed at each level of care. At the lowest level, staff in dispensaries are expected to manage only antenatal care and sexually transmitted infections (STIs). Health centers, maternity homes, and hospitals also attend uncomplicated births. In addition, referral hospitals are expected to be able to manage complicated deliveries and provide key emergency obstetric services, including Cesarean-sections. Because of the different types of cases managed, each level of care has different requirements for drugs, medical supplies, and equipment. Lists of the required items were prepared for each level of facility based on the ASTGs, and the equipment packages recommended by the team of local experts. (See the *Health Facility Survey* form, in Annex 3.)

Current availability of required drugs and medical supplies was assessed in each study facility by actual physical count of stock in pharmacies and stock areas, contrasted with the recorded stock level in supply records. In addition, the pattern of historical supply during the previous six months of a limited set of essential tracer drugs was assessed from pharmacy stock records. Current availability of a limited list of tracer drugs and medical supplies was assessed by direct observation during visits to the sample of retail pharmacies.

5 **Surveying self-reported RH treatment practices**

Usual or self-reported treatment practices for key study conditions were assessed in interviews with physicians, clinical officers and nurses during the visits to health facilities. Medical personnel – one physician (if present), one clinical officer (if present) and two nurses per facility – were asked to identify whether they had treated the targeted RH conditions within the past six months, and if so, which drugs and lab tests they recommended for the last case they treated. During the private pharmacy survey, the person in charge of the pharmacy was asked similar questions about the care they usually recommend to pregnant women and to women with vaginal discharge.

¹ The information was obtained from IPA and IMRES through correspondence.

6 Assessing actual RH treatment practices

a Actual patterns of care in health facilities

Actual patterns of RH care in health facilities (i.e., prescribing and test ordering) were evaluated retrospectively. Data collectors searched in the medical records systems or treatment registers for samples of cases of specific RH conditions, and they transcribed the treatments recorded in the medical records of identified cases. In addition to retrospective case review, data on antenatal care (which are not available from records) were collected from the maternity cards of women who were attending the antenatal clinic on the day of the study team visit. Women who recently delivered and were still at the facility were also surveyed regarding the care they received during their delivery.

b Observed treatment in pharmacies

Observed treatment practices in pharmacies were assessed by training young women to present at pharmacies as simulated customers with complaints of weakness and tiredness, possible signs of pregnancy-related anemia. These women visited 74 randomly selected pharmacies in Nairobi and after leaving the pharmacies, recorded all questions asked by the counter attendant about their history or symptoms, all recommendations about drugs, and any other advice.

B Kenya CES Data

Major findings from the CES field test in Kenya are discussed below in the following four categories:

- 1 Estimated local costs for treating selected RH conditions and medical equipment
- 2 Estimated overall requirements for treating RH conditions in Kenya
- 3 Variations in RH Treatment Practices and Actual Cost
- 4 Availability of Key RH Commodities at Sample Facilities

1 **Estimated local costs for treating selected RH conditions and medical equipment**

a Comparison of episodic costs for drugs and medical supplies

Unit costs for drugs and medical supplies for treating one episode of RH conditions were calculated by applying the median prices of commodities recommended by the Kenya ASTGs using the CES model. Some assumptions were made, where necessary, on the proportion of patients receiving different treatment options based on the available information. Detail information on the treatment of individual RH conditions is found in the Annex 2-Part 1 Table Four summarizes the estimated local costs for drugs and medical supplies to implement the Kenya ASTGs.

Table Four Country-Specific Cost Estimates for Drugs and Medical Supplies

RH Condition	Drug Cost (US\$)	Medical Supply Cost (US\$)	Total Episodic Cost (US\$)
Antenatal Care	\$1 06	\$4 64	\$5 69
Safe & Clean Delivery	\$0 28	\$4 93	\$5 22
Treatment of Complications			
Incomplete abortion	\$1 92	\$0 78	\$2 70
C-section	\$14 86	\$17 25	\$32 11
Dysfunctional labor	\$0 73	\$1 31	\$2 04
Hemorrhage	\$2 57	\$1 98	\$4 54
Laceration	\$0 11	\$1 94	\$2 04
Mastitis	\$0 74	\$0 24	\$0 98
Neonatal sepsis	\$0 45	\$3 04	\$3 49
Pre-eclampsia/Eclampsia	\$4 74	\$0 61	\$5 35
Puerperal sepsis	\$4 61	\$0 75	\$5 35
Urinary tract infection	\$0 30	\$0	\$0 30
Sexually transmitted infections	N/A	N/A	N/A
Syphilis	\$2 91	\$0 72	\$3 63
Gonorrhea/Chlamydia	\$1 51	\$0	\$1 51
Pelvic inflammatory disease	\$1 68	\$0	\$1 68

Treatment options should be reviewed from both clinical and cost points of view because any decisions on treatment regimens, including the selection of drugs and supplies, dosage, duration, and unit prices, have financial implications. For example, there is more than 20 times difference in the drug costs between the first and second line treatment options for puerperal sepsis: the first-line treatment with amoxicillin+metronidazole+paracetamol for seven days costs US\$1 51 while the second-line treatment with ampicillin+gentamycin+metronidazole suspension+dextrose costs US\$32 46. In addition to the increase in the drug costs by using injectables the second-line treatment costs US\$7 46 more for IV sets, branula syringes, and needles. Therefore, the weighted average costs for drugs and medical supplies per episode are greatly influenced by the proportion of cases treated by these two treatment options. The CES costing model allows users to compare various scenarios of treatment and procurement options and evaluate their cost implications.

Episodic costs based on the Kenya ASTGs using the local median prices, facility, and international prices were reviewed for conditions for which complete cost information was available. Six conditions met this requirement: dysfunctional labor, hemorrhage, pre-eclampsia and eclampsia, puerperal sepsis, UTI, and pelvic inflammatory disease (PID). The cost of the standard treatment protocols in dollars appears in Table Five below.

Table Five Average Weighted Case Cost of Reproductive Health Commodities

Complication	MEDS Prices	Facility Prices	% of	Int'l Prices	% of
Dysfunctional labor	\$2 04	\$2 60	127%	\$3 26	159%
Hemorrhage	\$4 54	\$5 21	114%	\$6 03	133%
Pre/eclampsia	\$5 35	\$8 60	161%	\$8 33	156%
Puerperal sepsis	\$5 35	\$6 24	117%	\$6 89	129%
UTI	\$0 30	\$0 33	110%	\$0 38	127%
PID	\$1 68	\$6 48	386%	\$1 52	90%

Overall, facility prices for the same treatment protocol are higher than MEDS prices by 10% to 61%. The much higher percentage increase for PID is due to a much higher facility price for norfloxacin. The international prices for the same treatment protocol were even higher than the facility prices, suggesting that the Kenyan facilities would do better procuring from local suppliers than from an international tender.²

b Cost for medical equipment

The Kenyan local prices for equipment were compared with international prices. Comparison of equipment prices requires much more detailed information about products than does comparison of drug prices. The price of medical equipment differs considerably from product to product, depending on the type, functions, manufacturers, and the quality of each product. Nonetheless, some relevant information was obtained.

Using the CES, it was estimated that the cost for a full set of new basic MCH clinic equipment using the Kenya median unit price is \$427 (based on US\$1 = KSh 55), which is much higher than the \$152 required using the median price of the same set of equipment supplied from international distributors (Table Six). The bulk of this difference in the MCH equipment cost, however, can be explained by the different type of baby scale selected in Kenya (unit cost \$255).

² There is the question of the quality of the drug or supply item. Suppliers to Kenyan facilities may procure from developing country sources, whereas the international suppliers may be procuring from developed country sources.

Table Six Costs of Basic MCH Clinic Equipment

Supply Item	Unit Median Price	
	Kenya	International
gestational wheel (2)	\$0 00	\$0 00
scale, adult (1)	\$29 09	\$87 31
scale, baby (1)	\$254 55	\$7 10
stethoscope (2)	\$10 91	\$3 96
stethoscope, fetal (2)	\$5 82	\$1 22
sphygmomanometer (2)	\$53 64	\$22 64
tape measure (2)	\$0 86	\$0 46
thermometer (2)	\$0 60	\$0 65
Total Cost	\$427 29	\$152 27

Costs for a full set of equipment for (a) labor, delivery, and postnatal care, and (b) hospital equipment are shown in Table Seven. Costs for a full set of new equipment for delivery room and maternity theater exceeded three times that of the international price. Most of this difference can be attributed to the price difference in the suction machine (Kenya median price is \$1,064, and international median price is \$238). A sphygmomanometer costs more than twice as much in Kenya (\$54) than the international price (\$23).

Table Seven Price Comparison of Equipment for Labor, Delivery, and Postnatal Care

Equipment Set per Area of Care	Kenya Median Price	International Price	Kenya Median Price as % of Int'l Price
Labor/delivery room	\$1,537	\$443	347%
Antenatal care	\$200	\$232	86%
Postnatal care	\$130	\$55	236%
Maternity theater	\$1,463	\$371	394%
Surgical package	\$3,956	(\$1,391)	(284%)

Local median prices for individual surgical equipment are listed in the CES Spreadsheets (Annex 2-Part 2). Based on the formula mentioned earlier, the total cost to equip a facility with a full set of new obstetric surgical equipment is estimated at \$3,956 in Kenya. The original list of equipment for surgical complications due to pregnancy, based on international recommendations, was significantly expanded during the study in terms of both the number and type of items, to reflect the type of equipment commonly used in Kenya. Because of these changes, however, we were not able to collect comparable prices for some items in the international market. For the 27 items we were able to compare, costs for all but one item were more expensive in Kenya compared with international prices. The price difference ranged between 30% and 880%, with prices an average of 350% more expensive in Kenya than the competitive international market price (Annex 2-Part 2).

2 Estimated overall requirements for treating RH conditions in Kenya

a Drugs and medical supplies

The total costs for treating women experiencing selected RH conditions was estimated using the costs per episode for (1) all women who experienced the condition in Kenya, and (2) women who sought treatment in government facilities (Table Eight)

From the results compiled in Table Eight, it was concluded that if the ASTGs in Kenya were to be fully implemented, in the public health facilities, the estimated cost for drugs and supplies for the 15 selected reproductive health conditions, would amount to US\$8,203,800 This figure represents 65% of the total MOH 1997 budget, for all treatment drugs and medical supplies, for all health services (US\$12,662,875)³ To fully implement the Kenya ASTGs for reproductive health care, for all women in Kenya in 1997, more than 100% of the MOH budget would have gone towards providing RH services

These figures must be interpreted with extreme caution, particularly in relation to two factors that affect the calculations The first factor is the estimation of episodic costs for drugs and medical supplies for RH conditions cannot yield a single figure As demonstrated in the previous section, any change in the selection of drugs and their regimens, medical supplies, and laboratory tests results in changes to the estimated episodic costs for drugs and medical supplies, and thus results in shifts to the total estimated requirements

Second, there are problems with the quality of the multipliers for the population-based estimates, namely the epidemiological and service utilization data It is extremely difficult to find accurate population-based morbidity information in many countries Often, available information must be extrapolated based on a number of assumptions to make such estimates

The population-based estimates are the products of these two factors, and therefore are sensitive to a number of assumptions built into the calculations The objective of these exercises, therefore, should be to study the implications of various scenarios by shifting the contributing factors and assumptions so that one can identify the areas where efforts should be focused to gain the maximum improvements in the cost-effective management of commodities and the quality of RH care For example, any changes in the antenatal care and deliveries will produce significant results because of the large number of women who receive these services

³Bates, J March 1998 *Options for Promoting Financial Sustainability of Drugs, Vaccines and Family Planning Supplies*, Arlington, MSH

Table Eight Estimated Overall Annual Requirements for RH Drugs and Medical Supplies

RH Conditions	Cost/ Case (US\$)	Currently in the Kenya		Currently in Public Facilities	
		Estimated Number of Cases	Total Cost (US\$)	Estimated Number of Cases	Total Cost (US\$)
Antenatal Care					
Basic care	\$5 65	1 116 973	\$5 303,100	907,438	\$4 308,300
Treatment for					
Fever	\$0 05	111,697	\$5,500	90,744	\$4,500
Malaria	\$0 17	212,225	\$36,800	172,413	\$29,900
Resistant malaria	\$2 08	21 222	\$44,200	17,241	\$35,900
Total Cost for ANC			\$5,389,600		\$4,378,600
Normal Delivery	\$5 22	1,177 000	\$6,142,200	365 364	\$1,906,700
Treatment of Complications					
Incomplete abortion	\$3 30	31 096	\$102,700	23 974	\$79 200
C section	\$43 12	26,991	\$1 163 800	21 610	\$931,800
Dysfunctional labor	\$2 04	31,143	\$63,400	24,011	\$48,900
Hemorrhage	\$4 54	22,711	\$103,200	17,510	\$79,500
Lacerations	\$5 64	51 906	\$293 000	40 018	\$225,900
Mastitis	\$0 98	1 077	\$1 100	830	\$800
Neonatal sepsis	\$3 49	5,191	\$18,100	4,002	\$14,000
Preeclampsia/Eclampsia	\$5 35	2 001	\$10,700	1 542	\$8,300
Puerperal sepsis	\$5 35	5,824	\$31 200	4,490	\$24,000
UTI	\$0 30	586 417	\$176 700	452,113	\$136,300
Total Estimated Cost for Treating Complications			\$1,963,900		\$1,548,700
STI					
Syphilis	\$3 63	44 679	\$162,300	36 298	\$131,800
Gonorrhea/Chlamydia	\$1 51	67 018	\$101 300	145,596	\$220,000
PID	\$1 68	13 835	\$23,300	10 667	\$18,000
Total Estimated Cost for Treating STI			\$286,900		\$369,800
Estimated Grand Total Cost for Providing RH Services			\$13,782,600		\$8,203,800

b Medical equipment

According to the assumptions made about the equipment needs per facility, the total cost to provide new sets of basic equipment was estimated to be \$2,376,600 for all public facilities in Kenya, and \$4,130,200 for all health care facilities in the country (Annex 2-Part 4). The costs for the basic MCH clinic equipment are estimated to require 34% of total equipment costs, while general hospital equipment is estimated to require 22% of the total equipment costs. If the baby scale, which is the most expensive item in the basic MCH clinic package (\$255), is replaced with an inexpensive baby scale that UNICEF provides (\$7.10), the unit cost of the basic MCH clinic package goes down to \$180. This will result in a 58% decrease in the total required (from \$816,980 to \$344,160) to equip all MCH clinic areas of the public health facilities in Kenya with new sets of equipment. These aggregated figures for the equipment needs change as the selection of items and their unit costs, as well as the quantity required, change. This is especially true because the range in unit prices for equipment tends to be wider than that of drugs and supplies. The CES model is designed to facilitate these "what if" analyses.

The question of how best the equipment need can be quantified requires further discussion. The number of beds per care area was used in this study, but that indicator may not always reflect the facility's capacity and the service volume. Alternative indicators need to be explored, and different indicators may prove to be useful in different health care systems.

3 Variations in RH Treatment Practices and Actual Cost Estimates

a Reported and recorded practice patterns

Actual practice patterns by health care providers were examined by using the data from two sources. The data on the self-reported practice patterns were obtained from interviews with health care providers at sample facilities. A total of 119 medical personnel, including 14 physicians (six of whom were OB/GYN specialists), 22 clinical officers, and 83 nurse midwives were asked standardized questions to identify drugs and laboratory tests they ordered for the last case whom they treated for the target RH conditions.

The second source of data for the actual practice patterns was the information on prescriptions and laboratory tests from patient registries and medical records. A total of 966 sample case records for target RH conditions, were randomly selected at the same sample facilities. The breakdown of these cases, by their type of conditions, is 119 antenatal care, 395 deliveries without complications, 60 maternal hemorrhage, 36 puerperal sepsis, and 347 sexually transmitted diseases.

Four examples of comparisons of reported and recorded practice patterns with the Kenya ASTGs are shown below with some observations.⁴ Annex 6 presents more detail information about the reported practice patterns and their compliance with the Kenya STGs for the 11 RH conditions surveyed.

⁴ Similar data are available for maternal hemorrhage, gonorrhea, and PID.

Table Nine Antenatal Care

Drugs and Laboratory Tests Recommended by ASTGs	% Reported by Health Care Providers Interviewed (n=110)	% Recorded in the Medical Records at Surveyed Facilities (n=116*)
Drugs		
Folic acid	58%	39%
Ferrous sulphate	67%	39%
Tetanus toxoid	56%	85%
Lab Tests		
Syphilis screening		59%
Hemoglobin	66%	37%
Blood grouping		23%
Urinalysis	50%	24%

*Note Cases with no drug or laboratory tests recorded are excluded

*Note Data unavailable for strength and form of drugs

- Fifty-eight percent of health care providers interviewed reported that they gave folic acid to women visiting the antenatal care clinic. Sixty-seven percent of health care providers interviewed reported that they gave ferrous sulphate to women visiting the antenatal care clinic. Both of these findings were in accordance with recommendations from the Kenya ASTGs. The compliance rates with the Kenya ASTGs, in this respect, were lower among recorded practices, namely only 39% of the case records indicated having received these drugs. Eighty-five percent of case records reviewed indicated they received the tetanus toxoid, which was higher than the proportion reported by the interviewed medical personnel.
- The syphilis screening test was conducted among nearly two-thirds of the antenatal care case records reviewed, while other laboratory tests recommended by the Kenya ASTGs (e.g., hemoglobin, blood grouping, and urinalysis) were less frequently found in the records. The syphilis screening and blood grouping were not identified as routine practices of the health care providers interviewed. How often these laboratory tests should be, and actually are, conducted have important implications for making estimates on the commodity costs for antenatal care. This is because the supplies for laboratory tests recommended by the Kenya ASTGs take up a greater share of the total costs per episode of antenatal care than the costs of drugs. For example, 78% of total cost for one course of antenatal care is consumed by the reagent for blood typing. If in fact, the blood typing is not frequently conducted in actual practices, estimated episodic costs of commodities for antenatal care will be much lower.

Table Ten Delivery without Complications

Drugs and Laboratory Tests Recommended by ASTGs	% Reported by Health Care Providers Interviewed (n=74)	% Recorded in the Medical Records at Surveyed Facilities (n=276*)
Drugs		
Ergometrine	96%	83%
Paracetamol	7%	8%
Tetracycline eye ointment	0%	4%
BCG vaccine	0%	0%
Polio oral vaccine	0%	0%
		Other items include
		Oxytocin 19%
		Dextrose 16%

*Note Cases with no drug or laboratory tests recorded are excluded

*Note Data unavailable for strength and form of drugs

- Reported and recorded prescription patterns were found to be similar for normal deliveries, except for 19% of the cases where oxytocin was used in place of ergometrine. Immunization and the prophylaxis use of tetracycline eye ointment were not identified in the interviews or in the medical records reviewed. Because the study did not examine the availability of these vaccines and drugs at the sample facilities, we could not determine how much of the observed discrepancies were due to the lack of vaccines and the drug.

Table 11 Puerperal Sepsis

Drugs and Laboratory Tests Recommended by ASTGs	% Reported by Health Care Providers Interviewed (n=74)	% Recorded in the Medical Records at Surveyed Facilities (n=25*)
Drugs		
1 st line Amoxicillin	31%	28%
Metronidazole (PO)	61%	60%
Paracetamol	36%	60%
2 nd line Ampicillin	22%	48%
Gentamycin	30%	64%
Metronidazole suspension		24%
Dextrose 5%	7%	20%
		Other items include
		Benzathine penicillin G 40%
		Penicillin G sodium 20%
		Hyoscine butylbromide 16%
		Ferrous sulphate 16%
		Normal saline 12%

*Note Cases with no drug or laboratory tests recorded are excluded

*Note Data unavailable for strength and form of drugs

- The average number of drugs prescribed per puerperal sepsis case among case records was 6.8 (the median value was 7.0), which is much higher than the three drugs recommended by the Kenya ASTGs for the first-line treatment (four for the second-line treatment). The number of antibiotics used in these cases ranged between zero to four with an average of two antibiotics per case.
- Both reported and recorded practice patterns indicated similar patterns of choice between the antibiotics among those recommended as first- and second-line treatments. The combined usage of two injectable antibiotics was more frequent among the case records reviewed while the use of oral antibiotics was recommended as the first-line treatment by the ASTGs.

Table 12 Syphilis

Drugs and Laboratory Tests Recommended by STGs	% Reported by Health Care Providers Interviewed (n=54)	% Recorded in the Medical Records at Surveyed Facilities (n=12)
Drugs		
1 st line Benzathine penicillin	57%	67%
Erythromycin	54%	0%
2 nd line Ciprofloxacin	2%	0%
Laboratory Tests		
VDRL	0%	9%
	Other items include	Other items include
	Doxycycline 9%	Procaine pen 25%
	Amoxicillin 7%	Metronidazole 8%
	Norfloxacin 6%	Norfloxacin 8%

*Note: Data unavailable for strength and form of drugs

- More than half of the health care providers interviewed identified two antibiotics recommended as first-line drugs by the Kenya ASTGs (i.e., benzathine penicillin G and erythromycin), whereas twelve case records indicated the single use of benzathine penicillin G or procaine penicillin as predominant. None of the case records indicated erythromycin and ciprofloxacin as being used to treat these 12 syphilis cases.

Possible reasons for the discrepancies between the recommendations by the Kenya ASTGs and the reported and recorded practice patterns might be

- (1) recommended drugs are not available at health facilities
- (2) equally appropriate substitutes are available and being used
- (3) the STGs' recommendations may no longer be appropriate (e.g., if Kenya has high tetanus toxoid [TT2+] coverage rates among women of reproductive age, then tetanus toxoid would not be necessary for the majority of pregnant women)
- (4) some routine practices, such as provision of iron supplements, may be often unrecorded

The discrepancy and its possible reasons need to be examined at the local level by taking into account the views of health care providers and the feasibility of recommended treatments in their local context

b Country-specific cost estimates and actual cost estimates

Differences in the treatment patterns have varying effects on the episodic costs of treatment. For example, 15 % of interviewed health care providers used blood transfusions for treating maternal hemorrhage cases, which the Kenya STGs do not recommend. The unit of blood is estimated to cost \$13.60 per case in Kenya, while the cost for normal saline per case is \$2.30. The weighted average drug cost for treating hemorrhages according to the reported practice pattern, therefore, is 22% higher than the cost based on the Kenya ASTGs (Table 13). The opposite is also true where less than expected proportions of health care providers indicated the use of drugs with high unit costs (e.g., suxamethonium and pethidine for Cesarean-section, and norfloxacin and augmentin for gonorrhea/chlamydia), which resulted in the lower total estimated drug costs compared with those based on the Kenya STGs.

Even if the unit prices are not significantly different between drugs with options, differences in the dosage and the duration of treatments will result in changes in the episodic drug costs. For example, the Kenya ASTGs recommend a single dose of cotrimoxazole for the treatment of UTI for non-pregnant patients, which costs only \$0.40 per case. The ASTGs also lists amoxicillin and erythromycin for pregnant cases and as alternative treatment choices. The episodic costs of these drugs are much higher, \$2.11 and \$3.52 respectively, because the regimens require the administration of the drug three times a day for 12 days. In the interviews, only 9% of health care providers indicated the use of cotrimoxazole in treating UTI, while others identified the use of more expensive regimen of antibiotics as their choices, including erythromycin, amoxicillin, and norfloxacin, which increased the episodic drug costs.

Table 13 Drug Costs per Episode Based on the Kenya ASTGs and Reported Practice Patterns

RH Conditions	Drug Costs per Kenya ASTGs (US\$)	Weighted Average Drug Costs According to Reported Practices	
	US\$	US\$	% of cost per ASTG
ANC	\$1.06	\$0.62	59%
Normal delivery	\$0.28	\$0.13	47%
Dysfunctional labor	\$0.73	\$0.42	58%
C-Section	\$14.86	\$4.12	28%
Hemorrhage	\$2.57	\$3.13	122%
Preeclampsia	\$4.17	\$2.39	57%
Puerperal sepsis	\$4.61	\$2.49	54%
UTI	\$0.30	\$0.75	250%
Syphilis	\$2.91	\$3.35	115%
Gonorrhea/Chlamydia	\$1.51	\$0.55	36%
PID	\$1.68	\$1.12	67%

(Based on the exchange rate US\$1=KSh 55)

Table 14 presents a comparison of the episodic drug and medical supply costs for five RH conditions based on the Kenya ASTGs and the actual practice patterns observed in the medical records. Annex 7 presents actual patterns of the treatments and their associated costs for drugs and medical supplies. The comparison highlights three issues that influence the costs of commodities. The first issue is the selection of drugs. In the case of

syphilis, the durations of treatment regimens rather than the difference in the unit costs of drugs made a difference in the total episodic costs for drugs. The use of erythromycin for seven days as recommended by the Kenya ASTGs is the major reason why the country-specific estimate for the drugs for syphilis treatment is five times more expensive than that of the actual cost estimate. Puerperal sepsis is another case where the use of drugs with high unit costs (in this case, gentamycin and metronidazole suspension) caused an increase in the total drug costs in the actual cost estimate compared with the country-specific estimate based on the Kenya STGs.

The second issue demonstrated here is the additional costs of medical supplies that are determined by the selection of drugs. The puerperal sepsis case illustrates this point. The frequent use of injectable antibiotics results in higher costs of such supply items as IV sets, syringes, and needles. Assuming that these items are disposable, the duration of drug regimens and the number of administration have direct impacts on the number, and thus the costs, of medical supplies for injectable drugs. Furthermore, the disposal of these items itself will add indirect costs to the facilities.

Table 14 Country-Specific Cost Estimates and Actual Cost Estimates Based on the Recorded Practice Patterns

RH Conditions	Country-Specific Estimates Based on the Kenya ASTGs			Actual Cost Estimates Based on the CES Survey			Actual Costs as a % of Country- Specific Cost Estimates (2) / (1) x 100
	Drugs (US\$)	Supplies (US\$)	Total (1)	Drugs (US\$)	Supplies (US\$)	Total (2)	
Antenatal Care	\$1 06	\$4 64	\$5 65	\$0 40	\$1 44	\$1 74	\$30 8
Normal Delivery	\$0 28	\$4 93	\$5 22	\$0 14	\$4 87	\$5 01	\$96 0
Puerperal Sepsis	\$4 61	\$0 75	\$5 35	\$10 05	\$2 41	\$12 45	\$232 7
Syphilis	\$2 91	\$0 72	\$3 63	\$0 53	\$0 12	\$0 65	\$17 9
Acute PID	\$1 68	\$0	\$1 68	\$0 91	\$0 01	\$0 92	\$54 8

(Based on the exchange rate US\$1=KSh 55)

The third issue is the costs of supplies for the laboratory tests, as illustrated in the case of antenatal care. The country-specific cost estimate for the antenatal care assumes that the urinalysis, syphilis screening, hemoglobin test, and blood typing are conducted on all women upon their first visit to an antenatal clinic. However, the survey results suggest the frequency of these tests, conducted in actual practices, may be much lower. Therefore, the system may be currently spending much less on the supply items for these tests than estimated, based on the country's treatment norms.

These analyses of factors that affect the drug and medical supply costs provide useful information to examine the following four aspects of the RH services and commodity management

- 1 Quality of care Are there problems of under- or over-treatment in the current practices?
Review of norms Are norms appropriate and feasible?
- 2 Cost-effective selection of treatment options Are the most cost-effective drugs selected by taking into account not only their unit costs but also costs per regimen and the costs for necessary supply items such as syringes and needles?
- 3 Accurate population-based cost estimates How to adjust the estimates for the population of interest in view of the observed differences in the treatment practices?

These issues in the Kenya RH services will be examined by the local experts at the planned CES policy workshop, and their recommendations will be reported once the process is completed

c Mothers' interview

A total of 181 women were asked about the tests and medications they were given during their first ANC visit. Results from these interviews were compared with those from the health care provider self-reports and are summarized in Table 15

Table 15 Medications and Tests Frequently Cited by Mothers and Health Care Providers

Test/Medication	No that Received	% of Respondents	Health Care Providers Reporting to Use Test/Medication
Blood Hb	122	67.4%	71/107 (66%)
Urine	57	31.5%	53/107 (50%)
Iron	59	37.3%	74/110 (67%)
Vitamins	17	10.8%	64/110 (58%)
Tetanus Toxoid Imm	148	93.7%	60/108 (56%)

These results show that the majority of women receiving antenatal care at the sample facilities received a tetanus toxoid vaccination and a test for blood hemoglobin levels during their first antenatal visit. Interestingly, however, there are differences between the pattern of antenatal care reported by pregnant women and health care providers, except in the frequency of the blood hemoglobin test. For example, only slightly more than half of providers reported that they routinely order tetanus toxoid immunization, while more than 90% of mothers reported receiving the immunization. In another example, rates that iron products and vitamins are prescribed to pregnant women according to health care providers were much higher than those reported by pregnant women.

Fifty-eight women who recently delivered and were still at the facility were also asked how much they spent for drugs or medical supplies needed for their delivery. Thirty-five women (60.3%) indicated they spent up to KSh 360.00 (\$6.55) to obtain items for their delivery. The mean expenditure was KSh 83.40 (\$1.52), and the median expenditure was KSh 65 (\$1.12). Mothers might be asked to purchase gloves, sutures, drugs, a mackintosh, or other items. The mothers' expenditure from the interviews can be compared to the Kenyan weighted standard treatment protocol cost for a normal delivery of KSh 287.10 (\$5.22).

Estimated mothers' expenditures given by the interviewed pharmacists ranged from KSh 15 (\$0.27) to KSh 845 (\$15.36), with an average of KSh 219.95 (\$4.00). This figure is much higher than what interviewed mothers reported that they spent, and is close to the unit cost of normal delivery according to the Kenyan ASTGs.

d Pharmacy survey

The role of the private pharmacies in providing the antenatal care in the communities was examined, in order to determine the extent to which women were seeking RH services outside the health care facilities.

Seventy-four pharmacies in Nairobi were visited by surveyors posing as pregnant clients. The breakdown of pharmacy personnel attending the surveyors was 57 registered pharmacists (77%) and 17 non-pharmacist pharmacy staff (23%). In addition, we conducted face-to-face interviews at 24 pharmacies. In total, twenty-four pharmacists and 15 non-pharmacist staff were interviewed.

In the face-to-face pharmacy interviews, 24 pharmacists were asked what typical medical supplies pregnant women should purchase for their delivery (Table 16).

Table 16 Medical Supplies that are Frequently Mentioned by Pharmacists for Purchase by Pregnant Women

Medical Supplies/Drugs	Number of Pharmacists Mentioned (%)
Surgical Gloves	19 (79.2%)
Cotton Wool	17 (70.8%)
Ergometrine	8 (33.3%)
Dextrose 5%	6 (25.0%)
Surgical Blades	6 (25.0%)
Syringe and Needle	5 (20.8%)

The questions the simulated purchasers were asked by the pharmacy staff are presented in Table 17. Over 60% of the pharmacy staff asked whether they had visited an antenatal clinic or an obstetrician/gynecologist, about 40% asked whether they had received a pregnancy test. Two common symptoms sought were joint pain and fever (both 43% of the pharmacy staff), which would be indicative of malaria. Common symptoms of pregnancy that were asked by the pharmacy staff included loss of appetite (47%) and vomiting (17%).

Table 17 Questions about History and Current Symptoms by Pharmacy Staff Attending to Simulated Pregnant Clients (n=74)

Question	% of attendants asking
History	
• visited ANC or OB/GYN doctor?	60.8%
• pregnancy tested?	39.2%
• when was last period?	23.3%
• other drugs concurrently taken?	1.4%
• any gynecological complaints?	2.8%
Current Symptoms	
• joint pain?	43.2%
• have fever?	43.2%
• lost appetite?	47.3%
• lack of sleep or rest?	20.3%
• any vomiting?	16.7%
• any swelling?	4.2%
• any pain?	5.6%

Nearly one-quarter of the pharmacy staff offered no drug recommendation for simulated clients (Table 18). For those who did recommend a drug, most recommended that pregnant patients take iron preparations (49% of pharmacy staff) or multi-vitamins (30%), typically a month's supply. The average purchase prices for these preparations would have been 200 to 300 KSh. Other recommended drugs included antimalarials (14%), analgesics (12%), or anti-emetics (8%).

Table 18 Drugs Recommended to Simulated Pregnant Clients by Pharmacy Staff (n=74)

Drugs recommended	No (%) of staff recommending	Avg quantity of drugs recommended (\pm S D)	Avg price in Ksh (\pm S D)
No drugs	17 (23%)	N/A	N/A
Iron preparations	36 (49%)	26 \pm 11	232 \pm 238
Vitamins	22 (30%)	25 \pm 13	308 \pm 286
Analgesics	9 (12%)	9 \pm 5	46 \pm 44
Anti-malarial	10 (14%)	9 \pm 9	16 \pm 8
Anti-emetics	6 (8%)	16 \pm 7	115 \pm 40

The proportion of pharmacists who recommended these drugs was much higher in the face-to-face survey. Both iron preparations and vitamins were recommended by 75% of pharmacists interviewed, and 25% of them recommended analgesics. Only two pharmacists interviewed said that they would not recommend any drugs. On average, 3.4 products were recommended by the pharmacists interviewed in the survey.

When asked the reasons for their recommendations, pharmacy personnel replied that they were recommending drugs due either to anemia or for nutrition/replacement reasons (Table 19). It is encouraging that most pharmacy personnel in Kenya recommended the use of iron, vitamins or nutritional supplements during pregnancy. To their credit, they also correctly advised women who might be pregnant to attend an antenatal clinic or to see an OB/GYN.

Table 19 Reasons Reported by Pharmacy Staff for Recommending Drugs to Simulated Pregnant Clients

Reason	% citing reason
Anemia	36.5%
Appetite	6.8%
Malaria	16.2%
Nausea & vomiting	8.1%
Pain	9.5%
Replacement/nutrition	40.5%

The most frequently recommended number of tablets for both the iron preparations and the multi-vitamins was 30. In the case of iron preparations, this quantity was usually charged 300 KSh (US\$5), while multi-vitamins were charged 30 KSh (US\$0.5). Women were trained to report that they had a limited budget and asked the attendant for advice about what to purchase. In these cases, the pharmacy personnel usually advised the pregnant client to buy less of the recommended product, commensurate with their budget (Table 20).

Table 20 Advice Given by Pharmacy Staff to Simulated Pregnant Clients in Response to Information about Limited Budget (n=68)

Advice	% of attendants giving
Substitute less expensive generic brands	20.3%
Purchase fewer products	20.3%
Purchase less of recommended products	40.5%
Purchase all drugs but pay later	2.7%
Look for money or purchase later	24.3%

The most frequent non-drug related item of advice given to potentially pregnant women was to visit the ANC clinic. Other non-drug related advice pertained to observing diet and food supplements during pregnancy (Table 21).

Table 21 Non-Drug Advice Given to Simulated Pregnant Clients Pharmacy Staff

Advice	% Giving
Visit an antenatal care clinic	68.9%
Recommend a doctor or midwife	20.3%
Diet or food supplement	37.8%
Have blood pressure checked	27.0%
Avoid certain drugs	24.3%
Rest	1.4%
Laboratory examination	1.4%

4 Availability of Key RH Commodities at Sample Facilities

a Drugs and medical supplies

Different RH conditions and services are managed at each level of care, and each level of care had different requirements for drugs, medical supplies, and equipment. Lists of the required items were prepared for each level of facility based on the Kenya ASTGs, and the equipment packages recommended by the team of local experts. The current availability of required drugs and medical supplies was assessed in each study facility by actual physical count of stock in pharmacies and stock areas, contrasted with the recorded stock level in supply records. In addition, the pattern of historical stock level during the previous six months of a limited set of essential tracer drugs was assessed from pharmacy stock records.

Annex 5 shows the number of sample facilities where selected basic drugs and medical supplies were present at the time of the survey, regardless of the quantity, summarized by the level of care (hospital, health center, maternity home, and dispensary) and by the type of management (government, mission, and private). Because the type of services provided is different by the level of care, commodities are grouped into three categories, namely:

- Drugs and medical supplies that should be available at all levels of facilities,
- Drugs and medical supplies that should be available for facilities performing normal deliveries (i.e., health centers and above), and
- Drugs and medical supplies that should be available for referral hospitals for obstetric complications and emergencies.

Although the number of samples are not comparable, government facilities tended to have more out of stock items at the time of the survey than did mission and private facilities (i.e., 56% of commodities analyzed were present in government hospitals as compared with 87% in mission hospitals). Government hospitals tended to stock most of the commodities examined, with the exception of a few drugs (e.g., ergometrine, and dextrose 5%) and medical supplies necessary for normal delivery and surgical procedures (e.g., suction catheter and 5 cc syringe and needle). At government health centers, the availability of drugs and supplies was generally lower than at hospitals. Basic items that are necessary for routine care for infections and normal deliveries such as amoxicillin, normal saline, and ergometrine, were not available at a number of government health centers.

Table 22 is an extract from Annex 5 showing the number of facilities with selected key commodities available. For example, only 23% of the facilities in the study had amoxicillin present at the time of data collection (Amoxicillin is used for the treatment of puerperal sepsis, mastitis, urinary tract infections, gonorrhea and chlamydia in pregnant women according to the Kenyan STGs). The availability of amoxicillin is especially low at lower level facilities. Only 10% of all health centers had amoxicillin, while 11% of dispensaries and none of the maternity homes had the drug available.

Normal saline is another essential commodity in procedures for normal delivery, Cesarean-section, and treatment of postpartum hemorrhage. However, only 50% of government hospitals and 28% of all health centers had normal saline. In total, only 39% of all facilities performing normal deliveries had normal saline.

As for basic ANC, the availability of prenatal vitamins was generally high, especially at lower level facilities 100% of dispensaries and 93% of health centers had ferrous sulphate, and similar rates were seen for folic acid

Only 53% of all facilities performing normal deliveries had regular (non-sterile) gloves They were not available at 50% of government hospitals, 46% of government health centers, and 67% of mission hospitals The availability of sterile gloves was higher 81% of all facilities performing normal deliveries, 93% of all hospitals and 72% of all health centers Another item important for decontamination at health facilities is Jik (bleach solution used for decontaminating surfaces and equipment - effective against HIV) Jik was not available at 51% of all facilities

Finally, the survey shows that only 36% and 49% of all facilities (excluding dispensaries) had branulas and IV sets, respectively (Ninety six percent of the government health centers did not have branula) These items were not available in the majority of health centers, indicating that they would not be able to handle obstetric emergencies requiring IVS, such as obstructed labor, hemorrhage, puerperal or neonatal sepsis, or eclampsia For those lower level facilities that do not treat such emergencies, it is helpful to have an IV started before transporting a critically ill mother or child to the closest referral facility

Table 22 Availability of Selected Commodities at Sample Facilities*

Item	All Facilities	Hospital				Health Center				Maternity Home n=3	Dispensary n=9
		Govt. n=6	Mis n=6	Pr1 n=3	Total n=15	Govt. n=24	Mis n=3	Pr1 n=2	Total n=29		
amoxicillin	13/56	5	2	2	9 (60%)	2 (8%)	1	0	3 (10%)	0	1
ferrous sulphate	48/56	5	5	1	11 (73%)	22 (92%)	3	2	27 (93%)	1	9
normal saline	22/47	3	6	2	11 (73%)	5 (21%)	2	1	8 (28%)	3	
oxytocin	17/47	5	5	3	13 (87%)	0 (0%)	0	2	2 (7%)	2	-
syringe and needle	44/56	4	5	2	11 (73%)	19 (79%)	3	2	24 (83%)	3	6
regular gloves	25/47	3	4	1	8 (53%)	11 (46%)	3	2	16 (55%)	1	-
sterile gloves	38/47	5	6	3	14 (93%)	17 (71%)	2	2	21 (72%)	3	
branula	17/47	5	6	2	13 (87%)	1 (4%)	0	2	3 (10%)	1	-
IV set	23/47	4	6	2	12 (80%)	6 (25%)	1	1	21 (72%)	3	-
Jik	23/47	5	1	1	7 (47%)	15 (63%)	1	0	16 (55%)	0	-

*Note The numerator is the number of facilities with commodities available and the denominator is the total number of facilities that responded to the survey

Table 23 presents the average monthly stockout days observed during the last six months at the government facilities surveyed for selected drugs for different levels of care. RH conditions that are shaded in the table indicate that those drugs are included in the recommended treatment by the Kenya ASTGs.

Table 23 Monthly Stockout Days for Selected Key Drugs

	Average # Stockout Days per Month			RH Conditions that Require Drugs and Medical Supplies Surveyed																			
				A N C	D E L I V E R	N S E P S I S	P S E P S I S	M A S T I T	U T I	E C L A M P S	I N C O M P	D Y S F U N	C S E C T	L A C E R A	H E M O R R	S Y P H	G O N O	P I D					
	Dispensary (n=8)	Health Center (n=24)	Hospitals (n=6)																				
Drugs that should be available at all levels																							
Ferrous sulfate	0	0	0	■																			
Benzathine penicillin	15	3	1		■																■		
Metronidazole	5	5	6			■				■												■	
Doxycycline	11	1	9																			■	
Drugs that should be available at health centers and above																							
Ergometrine	-	2	6		■					■													
Amoxicillin	-	14	6			■			■														
Lidocaine	-	5	4				■											■					
Oxytocin	-	10	6								■		■						■				
Normal saline		13	4								■		■							■			
Drugs that should be available at hospitals																							
Dextrose	-	-	6				■				■		■										

As observed in the current availability of the selected drugs (see Table 22), prenatal vitamins were generally available at the facilities in the last 6 months. Also, amoxicillin, oxytocin, and normal saline were out of stock at health centers surveyed for between 10 to 14 days per month on average. The low stock level of amoxicillin may explain the low level of compliance (28%) with the treatment recommended for puerperal sepsis at the surveyed facilities.

On average, benzathine penicillin and doxycycline (both are recommended for treatment of STI) were out of stock half every month, and one third of the time, respectively, at surveyed dispensaries. Dextrose was out of stock on average for 6 days per month at six government hospitals surveyed.

The planned CES workshop should examine whether the observed availability of key RH drugs may explain reported and recorded practice patterns. Practical ways to monitor the stock level of key RH drugs at different levels of facilities need to be explored.

b Equipment

The study examined the availability of the equipment at sample facilities, and the results for individual items as well as for three minimum sets of equipment packages are presented below

The basic maternal and child health (MCH) clinic equipment package includes eight basic items that are essential for conducting regular monitoring of pregnant women and babies at MCH clinics (Table 24). The minimum number of each item is also listed in the table. Only functioning equipment was counted as present. If no answer (missing information) was given for a particular item, it was excluded from the analysis.

On average, most of the items were present at sample MCH clinics. However, frequent absence of gestational wheels and tape measures was observed. None of the eight items satisfied the number of units desired in total, based on the minimum standard set by the study. In particular, the survey revealed that there are a limited number of adult and fetal stethoscopes, sphygmomanometers, and thermometers available at sample facilities.

Table 24 Availability and Additional Needs for Basic MCH Equipment

Item	No of Units Desired per MCH Clinic (1)	No of MCH Clinics Surveyed (2)	No of Units Desired (3) = (1) x (2)	No of Units Available (4)	No of Additional Units Needed (3) - (4)
Gestational wheel	2	50	100	10	90
Adult scale	1	54	54	51	3
Baby scale	1	54	54	48	6
Stethoscope	2	55	110	50	60
Stethoscope, fetal	2	56	112	53	59
Sphygmomanometer	2	51	102	47	55
Tape measure	2	54	108	15	93
Thermometer	2	52	104	47	57

Out of the above eight basic MCH clinic pieces of equipment, we selected four items that we consider absolutely essential to maintain the minimum level of MCH services, and they are

- adult scale
- stethoscope
- stethoscope, fetal
- sphygmomanometer

Table 25 presents the number of facilities with these four items present at the time of the survey, shown by the type of management and the level of care. Hospitals were better equipped with these essential MCH items compared with health centers and dispensaries. It is disturbing that one-third of dispensaries did not have at least one of four essential pieces of equipment for minimum MCH services, considering that MCH services are probably one of the important functions of dispensaries. Among three sectors, mission facilities were ranked the best for MCH equipment, with 90% of sample facilities satisfying the minimum equipment standard, while only 66% of government facilities met the criteria.

Table 25 Availability of Essential MCH Equipment

	Number of facilities with essential MCH equipment available			Total no of facilities by type	Percentage of facilities with essential MCH equipment
	Govt.	Mission	Private		
Hospital	5	5	2	15	80%
Health Center	16	3	2	29	72%
Maternity Home	0	0	2	3	N/A
Dispensary	5	1	0	9	N/A
Total No of facilities by sector	38	10	8	56	N/A
Percentage of facilities with essential MCH equipment	66%	90%			N/A

We identified 23 items of basic equipment for labor, delivery and postnatal care as listed in Table 26. The number of units for each item per facility was determined by the service capacity of facilities, represented by (1) the number of delivery beds for labor and delivery at health centers, maternity homes and hospitals, (2) the number of antenatal or postnatal beds at maternity homes and hospitals, and (3) the number of maternity surgical theaters at hospitals.⁵

The table indicates both a shortage and surplus (shown in minus sign and in bold letters) of equipment in this category based on the formula used in this study.⁶ The same pattern of an acute shortage of sphygmomanometers, stethoscopes, tape measures, and thermometers that was observed in the MCH clinics described above appears to exist in the labor/delivery/postnatal care units of the sample facilities.

⁵ See the CES Spreadsheets (Annex 2-Part 2) for the number of units required for each item per every two delivery beds for labor/delivery equipment, per every ten antenatal or postnatal beds for postnatal care and per every maternity surgical theater for management of complications.

⁶ The large surplus of tongue blades may be caused by the counting error by data collectors.

Table 26 Availability and Additional Needs of Basic Equipment for Labor, Delivery, and Postnatal Care

Item	No of Items Based on the Formula	Total No of Items Available at Sample Facilities	Additional No of Items Needed
airway	192	68	124
ambu bag baby	294	38	256
blanket baby	312	399	-87
bowl, kidney stainless steel 10'	246	351	-105
bowl 36"	348	335	13
forceps, artery 8' straight	354	541	-187
gestational wheel	207	8	199
needle holder 7"	348	233	115
scale, adult	138	14	124
scale, baby	138	40	98
scissors, cord 10 cm	276	149	127
scissors episiotomy 12.5 cm	138	285	-147
scrub brush surgeons	174	33	141
sheet, Macintosh	174	466	-292
speculum vaginal	174	103	71
sphygmomanometer	1839	41	1798
stethoscope	1839	38	1801
stethoscope fetal	432	62	370
suction machine	156	31	125
tape measure	1821	10	1811
thermometer	1839	75	1764
tongue blade	225	(1609)	(-1384)
towel baby drying	312	337	-25

In order to determine how many facilities are adequately equipped with absolutely essential items to provide the minimum level of services in deliveries and postnatal care, we selected seven items and reviewed their availability

Essential equipment package for normal delivery

- suction machine
- stethoscope
- stethoscope, fetal
- sphygmomanometer
- artery forceps, 8"
- Macintosh sheet
- cord scissors, 10 cm

Table 27 presents the number of facilities with all seven essential pieces of equipment available for normal delivery at the time of the survey. Despite the surplus of certain items as shown above, we observed that only half of hospitals, 17% of all health centers, and one-third of maternity homes were adequately equipped to conduct normal delivery with appropriate equipment. By sector, more government facilities were found less equipped, with only 17% of them having all items of the essential package. More than half of mission facilities did not meet the criteria in this area, which presents an interesting contrast with their high level of equipment for basic MCH services.

Table 27 Availability of Essential Equipment for Normal Delivery

	Number of Facilities with Essential Normal Delivery Equipment Available			Total Number of Facilities by Type	Percentage of Facilities with Essential Equipment
	Govt	Mission	Private		
Hospital	3	3	2	15	53%
Health Center	2	1	2	29	17%
Maternity Home	0	0	1	3	N/A
Total number of facilities by sector	30	9	8	47	N/A
Percentage of facilities with essential equipment	17%	N/A	N/A	N/A	N/A

A similar analysis was conducted for equipment required in surgical procedures for management of pregnancy-related complications. Thirty-three items of surgical equipment were identified, and the number of pieces of equipment that were required based on the formula, and that were available at 15 sample facilities, are summarized in Table 28. Based on our formula, there are only five items that were in short stock (airway, large toothed dissecting forceps, small kidney dish, surgical trousers, and surgical vest) and the rest of the equipment appeared to be almost redundant in sample facilities as a whole.

Table 28 Availability and Additional Needs of Basic Equipment for Surgical Complications

Item	Number of Items Required Based on the Formula	Total Number of Items Available at Sample Facilities	Additional Number of Items Needed
airway, sm, med, lg	144	114	30
blade handle (bard parker #4)	32	87	-55
boots non static gum (pair)	32	137	-105
bowl lg stainless steel	32	104	-72
forceps, artery 8"	96	162	-66
forceps, artery fine	96	117	-21
forceps dissecting nontoothed fine	16	65	-49
forceps, dissecting nontoothed, lg	16	101	-85
forceps, dissecting toothed fine	16	104	-88
forceps, dissecting toothed lg	16	14	2
forceps, sponge holding	64	170	-106
forceps, tissue green Armetage	96	212	-116
forceps, tissue, Allis	32	164	-132
galli pot 6"	16	58	-42
kidney dish, lg	16	57	-41
kidney dish, sm	32	29	3
laryngoscope	16	108	-92
needle holder, long	32	159	-127
pack lg green	32	58	-26
retractors Doyens	16	38	-22
retractor Lagenbeck	32	97	-65
scissors, Mayo curved	16	71	-55
scissors, straight	16	75	-59
scrub brush	32	73	-41
sheet plastic Macintosh	16	24	-8
suction end (metal)	64	335	-271
surgical gown	32	301	-269
towel clip	96	108	-12
towel, abdominal sheet	16	479	-463
towel green	128	27	101
tray, placenta	16	334	-318
trousers, surgical	32	12	20
vest, surgical	64	16	48

Again, we selected eight pieces of equipment that are considered absolutely essential in obstetric surgery as listed below

- blade handle
- artery forceps (any)
- sponge forceps (any)
- tissue forceps (any)
- Lagenbeck retractors
- Mayo scissors (any)
- needle holder
- abdominal sheet or green towel

Despite the high level of availability of many items in this group, only six out of 15 sample hospitals in total (40%) had all essential equipment for obstetric surgery (Table 29)

Table 29 Availability of Essential Equipment for Obstetric Surgery

	Number of Facilities with Essential OB Surgery Equipment Available			Total Number of Facilities by Type	Percentage of Facilities with Essential Equipment
	Govt. (n=6)	Mission (n=6)	Private (n=3)		
Hospital	2	4	0	15	40%

C Summary of Findings from Kenya Field Test

Although this field test was not intended to make an assessment of the supply system of drugs and other medical commodities in Kenya, we learned a great deal about the system during the course of the test, and our observations are listed below. These observations require further examination based on a clear understanding of the system and practices in Kenya, which is expected at the planned CES policy workshop.

- The availability of drugs and medical supplies varied between the level of care as well as between government, mission, and private sectors. The availability of commodities tends to be lower at lower level facilities. Mission facilities tend to maintain a higher level of availability. Regardless of the sector or the level of care, there were some facilities lacking basic drugs and medical supplies essential to providing routine RH services. At lower level facilities, the essential equipment for providing critical care for obstetric emergency cases, before transferring patients to referral facilities, was not available.
- At the majority of facilities surveyed, basic medical equipment was either sub-standard or not available. This pattern was observed for all three equipment packages: basic MCH, labor/postnatal care, and obstetric surgery.
- The formula used in this study suggested there might be more equipment available at some facilities than the minimum level required for non-basic equipment. The principle of the conversion formula requires close scrutiny, but it may suggest an opportunity for improving the efficiency in the allocation of resources in the health care system.

- The procurement system for drugs and medical supplies by MEDS seems to be efficient in comparison to international commodity prices. Similar itemized price analysis for drugs and supplies purchased by the government would be highly valuable.
- There are discrepancies between reported and recorded practices by health care providers and Kenya STGs. The type of observed discrepancies were different in relation to the type of health care providers. Variations in the practice patterns resulted in both increases and decreases in drug and supply costs for treating the RH conditions.
- The recommended treatment guidelines should be reviewed from the cost and commodity availability perspective. In addition, further analysis is needed to identify the factors that affect the actual practice patterns.
- Some pregnant women incurred out-of-pocket expenditures for drugs and medical supplies (e.g., gloves and cotton wool) for their delivery at health care facilities. Estimated expenditures given by interviewed pharmacists (average \$4.00) and mothers (average \$1.18) differed.
- Private pharmacies are providing drugs and non-drug advice to pregnant women. Iron preparations were the most frequently recommended product. Non-drug advice included advising pregnant women to visit an antenatal care clinic and dietary recommendations.
- Estimated financial requirements for drugs and medical supplies for RH services in Kenya, based on the field test, exceeded the government budget currently allocated for these areas of activity. Adjustments to the estimates should be examined using the information on the actual practice patterns, their associated costs for drugs and medical supplies, as well as the availability of key commodities.

IV IMPROVEMENTS MADE TO THE CES

In the course of this field test, several challenges were met that resulted in a number of changes in, and modifications to, the CES approach. The CES Spreadsheets were substantially improved during this field test, and are now capable of making projections for RH commodity needs for individual treatment, and for health care facilities or communities. It is a major task of the project to develop a user-friendly manual for the use of this tool. The CES manual itself needs to be tested very carefully, as it is the key for making the CES a practical management tool that can be used by different groups of users, including health care providers, NGOs, managers at the MOH, and donors.

A Data Collection for the CES Model

- A more specific framework for collecting data necessary for the CES model was developed.
- Survey methodology and data collection instruments were drafted and tested. At this point, they are adapted to situations in Kenya and need further refinement to make them a template for use in different countries.

B CES Spreadsheets

- Formulation and unit per dose columns were added to make it easier to calculate the total price of drugs and medical supplies for the course of treatment.
- The sections for drugs and medical supplies were clearly separated. The names of drugs are indicated for medical supplies that are used (e.g., syringe and needle, and IV set) so that the necessary quantity of medical supplies can be counted by referring to the total dose of corresponding drugs.
- A column was added for the percent cases treated with different treatment options, such as the antibiotic resistance cases and treatment for different severity of cases. This allows users of the CES to factor in various rates of case mix in their practice environment. This also allows the CES to calculate weighted average treatment costs for different treatment options.
- A column was added to indicate the level of care where certain treatment is supposed to take place, which assists users in making cost estimates at different levels of health care service.
- A macro for making unduplicated lists of drugs and medical supplies was developed so that after entering drugs and medical supplies in each treatment sheet based on the STGs, users can create lists of drugs and supplies and enter basic information (unit, dose, level of care, formulation and various costs) once per item. The lists become the source for the cost calculation as relevant cells are linked with the appropriate parts of the treatment sheet for each condition. This function allows CES users to add, delete, and change information about drugs and medical supplies easily and to see immediately the cost implications of those changes.
- Three columns were added to combine cost information from the unduplicated list of drugs and medical supplies.
- Lists of RH medical equipment were further developed in order to include essential items for each selected treatment procedure.

- A framework for combining all information from the CES Spreadsheets into population-based cost estimates was developed and tested. By linking relevant cells across different parts of the spreadsheets, the CES demonstrated the capacity to conduct a simulation analysis for RH commodity needs.

C Data Analysis Tools

- A data analysis program for survey data using Epi Info was developed and is being revised.
- Reference material on country specific drug and health problems is being developed.

D The Revised CES Package

As a result of this field test, the CES now includes the following tools

- 1 Standard data collection forms and instructions
- 2 Spreadsheet templates for each identified RH condition for costing using the information on selected drugs, medical supplies, and equipment, and their required quantities and prices
- 3 Spreadsheets for estimating population-based RH needs that are linked with the information obtained from the templates referenced above
- 4 Software (i.e., Epi Info) for conducting data analysis of the survey information obtained for country-specific and actual RH cost estimates

All of these tools need further refinement in order to make them easy to use at various levels of health care system in different settings

V CONCLUSIONS

The CES was useful in quantifying the commodity needs to improve reproductive health care

The field test demonstrated that the framework and the approach used in the CES were useful in quantifying the commodity needs of the sampled facilities, which could contribute to improving reproductive health care at these facilities

There were some instances where the description of treatment guidelines did not provide enough information to meet the data requirements of the CES. In such cases, we sought advice from government officials and medical experts. This is one of the key areas where clear instructions from the CES manual will be important especially for countries where standard treatment guidelines do not exist

The CES identified where treatment guidelines fail

The approach to examine discrepancies between the normative guidelines and the treatment practices proved to be equally important. The information generated from this analysis can help the facilities and health care managers understand where treatment guidelines fail, and offer some possibilities as to why they fail. The information on drugs' and commodities availability may offer possible explanations for the gap between what is recommended and what is practiced. These two sets of information should be used not only to identify where recommended practices fail, but also to re-evaluate the recommendations themselves. The field test in Kenya demonstrated that the CES could create an opportunity for discussions on RH policy and management issues. The CES workshop is expected to facilitate this final stage of the CES process.

Using multiple data collection methods allowed for validation and cross-checking of findings

Cross-examining the data provided by health care providers and consumers through face-to-face interviews, simulated purchase surveys, and medical records review provided useful information. Also, the field test indicated it is feasible to examine health care-seeking behavior in women and the financial costs incurred outside the health care facilities, although the extent of this practice and its financial implications need further study.

Further refinement is necessary to make the CES a generic tool that can adjust to the needs of different health care settings

This field test demonstrated that the current CES method was feasible in Kenya. However, the final product of the CES needs to be generic and flexible enough so that it can be used in different health care systems in other countries. In particular, the current sample selection plan and the data collection forms for the survey have some elements that are specific to the situation in Kenya. Also, the health commodity purchase and supply system in Kenya is highly centralized, in both the government and the mission sectors, which is not the case in some other countries. We need to review our experience in Kenya from this perspective, and incorporate it in the final product of the CES. Additional field tests of the CES method in countries with different health care systems will be beneficial in guiding revisions.

VI RECOMMENDATIONS FOR FURTHER IMPROVEMENTS OF THE CES

Further refinement of the CES is recommended. Most importantly, the final CES should be developed as a set of practical and free-standing management tools that can be used by health care managers and donors with minimum external technical support. To this end, the following two areas should be pursued:

A Simplify the Method

In order to make the CES a free-standing management tool, we need to ensure that the methodology is simple and generic enough for users to implement the CES with resources available to them in their own environment. The current format of spreadsheets, survey forms, instructions, and data analysis programs should all be refined to meet this criteria. A manual that is easy to read and contains all the necessary information for users to implement the CES needs to be developed. This manual should, at minimum, cover

- how to design and implement the CES
- how to use the spreadsheets
- how to organize the survey
- how to enter and analyze the information using Epi Info software
- how to make use of the information produced by the CES for improvements in the RH services (i.e., using the data for decision making)

The manual itself needs to be field tested together with the revised CES.

B Package the CES Tools for a Subset of Activities

Multiple aspects of the CES can also be used for a subset of activities that can assist health care managers in improving their commodity management. The CES's activities and tools could be grouped according to such needs of potential CES users as

- 1 quantifying drugs, medical supplies, and equipment needed to carry out the treatment norms
- 2 selecting drugs, medical supplies, and equipment
- 3 assessing and monitoring the availability of commodities
- 4 analyzing the inefficiencies of the supply system
- 5 monitoring prescribing and practice patterns

This allows CES users to select the appropriate component(s) of the CES package according to their needs and resources.

VII NEXT STEPS FOR RPM

- 1 RPM should focus on making further revisions to the CES and its tools, including developing the CES manual, based on the field test in Kenya, as recommended above
- 2 RPM should plan additional field tests of the revised CES Spreadsheets and manual in at least one country in the LA/C and Asia regions. Countries with different systems for providing RH services are considered appropriate. The CES should be continuously refined through these field tests. The final field test should be planned in such a way that local collaborators will conduct the CES with minimal technical support from RPM. This will allow us to determine whether the CES will be ready for dissemination as a free-standing management tool to interested parties. These field tests will also develop the core technical people in each region who will be familiar with the CES. They can facilitate the application of the CES in their regions as local resource persons, and thus increase the sustainability of the strategy in the long run. The information gathered in these field tests will also inform donors and governments about the global range of estimated RH commodities costs
- 3 RPM should host an electronic conference on RH services and the management of RH commodities to
 - a disseminate the cost information collected through the application of the CES
 - b raise awareness about costs, availability and management issues for RH commodities
 - c gather feedback on the implications of costs of RH commodities and the impact that the inefficiency in the supply systems has on the quality and outcomes of RH care
 - d discuss the financial requirements of RH programs
- 4 RPM should plan a roundtable discussion with donors, and present the information and lessons learned in the field tests in preparation for the Cairo +5 meeting in 1999

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ANNEX ONE CES SPREADSHEETS
Part One Estimated Drug and Medical Supply Requirements per Treatment for
Selected RH Conditions According to the Adjusted STGs in Kenya

Antenatal Care Treatment

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
malara	1	chloroquine phosphate	PO	600	mg	tablet	1	1	150 mg	4	6 0%	\$0 010	\$0 041	\$0 002
resistant malaria	1	chloroquine phosphate	PO	300	mg	tablet	1	4	150 mg	2	6 0%	\$0 010	\$0 081	\$0 005
	1	quinine hydrochloride	PO	600	mg	tablet	3	6	250 mg	2 4	1 2%	\$0 048	\$2 085	\$0 025
fever dlscomfort	1	paracetamol	PO	1	g	tablet	3	2	500 mg	2	10 0%	\$0 004	\$0 050	\$0 005
hookworm	1										0 0%			
Average Cost per Case													\$0 037	

Note		Supply Item	Supply Unit	Name of Drug (if IMor IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
malaria test	1	glass slide	1 each		1	2	2	10%	\$0 026	\$0 052	\$0 005
Average Cost per Case										\$0 005	

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Antenatal Care Basic

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)			
												Median Unit Cost	Cost per Episode	W Aver T Cost	
basic ANC	1	folic acid	PO	5	mg	tablet	3	196	5 mg	1	100 0%	\$0 001	\$0 748	\$0 748	
	1	ferrous sulphate	PO	200	mg	tablet	1	196	200 mg	1	100 0%	\$0 001	\$0 271	\$0 271	
	1	tetanus toxoid	INJ	0 5	ml	vial	1	2	1 ml	0 5	100 0%	\$0 000	\$0 000	\$0 000	
													Unit Episodic Cost		\$1 019

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (if IMor IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)			
									Median Unit Cost	Cost per Episode	W Aver T Cost	
basic ANC	1	unne dipsticks	bottle of 100		0 01	1	0 01	100%	\$7 991	\$0 080	\$0 080	
	1	antenatal record	1 each		1	1	1	100%	\$0 091	\$0 091	\$0 091	
syphilis screening	1	syringe and needle 2cc	1 each		1	2	2	100%	\$0 064	\$0 127	\$0 127	
	1	VDRL kit	1 each		1	1	1	100%	\$0 391	\$0 391	\$0 391	
	1	glass tube blood red top	1 each		1	1	1	100%	\$0 209	\$0 209	\$0 209	
HB	1	glass tube capillary	1 each		1	1	1	100%	\$0 041	\$0 041	\$0 041	
	1	lancet	1 each		1	1	1	100%	\$0 030	\$0 030	\$0 030	
blood group & RH	1	glass slide	1 each		1	1	1	100%	\$0 026	\$0 026	\$0 026	
	1	reagent for blood typing	1 each		1	1	1	100%	\$3 632	\$3 632	\$3 632	
										Unit Episodic Cost		\$3 729

Acute PID

SOURCE KENYA NASCOP & STGs

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dos	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
non pregnant	1	norfloxacin	PO	800	mg	tablet	1	1	400 mg	2	90 0%	\$0 395	\$0 791	\$0 712
	1	doxycycline	PO	100	mg	cap	2	7	100 mg	1	90 0%	\$0 029	\$0 412	\$0 371
	1	metronidazole	PO	400	mg	tablet	2	10	200 mg	2	90 0%	\$0 005	\$0 200	\$0 180
pregnant	1	erythromycin	PO	500	mg	tablet	4	10	250 mg	2	10 0%	\$0 049	\$3 913	\$0 391
	1	metronidazole	PO	400	mg	tablet	3	10	200 mg	2	10 0%	\$0 005	\$0 300	\$0 030
Average Cost per Case													\$1 684	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (If IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
Average Cost per Case									\$0 000		

Dysfunctional Labor

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose	Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
											Median Unit Cost	Cost per Episode	W Aver T Cost
	3	oxytocin	IV	10	IU	1	1	10 IU	1	100 0%	\$0 137	\$0 137	\$0 137
	3	dextrose 5%	IV	500	ml	1	1	1000 ml	0 5	100 0%	\$1 182	\$0 591	\$0 591
Average Cost per Case												\$0 728	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (if IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
	3	IV set	1 each	dextrose 5%	1	1	1	100%	\$0 291	\$0 291	\$0 291
	3	branula	1 each	dextrose 5%	1	1	1	100%	\$0 864	\$0 864	\$0 864
	3	syringe and needle 2cc	1 each	oxytocin	1	1	1	100%	\$0 064	\$0 064	\$0 064
	3	partogram	1 each		1	1	1	100%	\$0 091	\$0 091	\$0 091
Average Cost per Case											\$1 309

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C-section

SOURCE Kenyatta, Nairobi Thika

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)			
												Median Unit Cost	Cost per Episode	W Aver T Cost	
in addition to drugs for normal birth	3	thiopentone sodium	IV	0.5	mg	amp	1	1	0.5 g	0.01	100.0%	\$1 364	\$0 014	\$0 014	
	3	sterile water	IV	5	ml	vial	1	1	10 ml	1	100.0%	\$0 042	\$0 042	\$0 042	
	3	atropine	IV	0.6	mg	amp	3	1	1mg/ml	1	100.0%	\$0 095	\$0 284	\$0 284	
	3	suxamethonium	IV	100	mg	amp	1	1	50 mg/ml	2	100.0%	\$0 956	\$1 912	\$1 912	
	3	paracetamol	PO	1	g	tablet	3	3	500 mg	2	100.0%	\$0 004	\$0 074	\$0 074	
	3	normal saline	IV	2000	ml	bottle	1	1	1000 ml	2	100.0%	\$1 145	\$2 291	\$2 291	
	3	pancuronium	IV	4	mg	amp	1	1	2 mg/ml	2	100.0%	\$2 444	\$4 887	\$4 887	
	3	neostigmine	IV	2.5	mg	amp	1	1	2.5 mg/ml	1	100.0%	\$0 376	\$0 376	\$0 376	
	3	oxytocin	IV	5	IU	amp	1	1	10 IU	0.5	100.0%	\$0 137	\$0 069	\$0 069	
	3	pethidine	IV	100	mg	amp	4	1	100 mg/ml	1	100.0%	\$0 778	\$3 113	\$3 113	
	3	dextrose 5%	IV	1000	ml	bottle	1	1	1000 ml	1	100.0%	\$1 182	\$1 182	\$1 182	
	if vomiting	3	prochlorperazine	IM	12.5	mg	vial	1	1	12.5 mg/ml	1	25.0%	\$1 330	\$1 330	\$0 332
	Average Cost per Case													\$14 575	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (If IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)			
									Median Unit Cost	Cost per Episode	W Aver T Cost	
in addition to supplies for normal birth	3	suction catheter sz 10	1 each		1	1	1	100%	\$0 364	\$0 364	\$0 364	
	3	scalpel blades sz 23	1 each		2	1	2	100%	\$0 082	\$0 164	\$0 164	
	3	sutures chromic catgut sz 1 or 2	1 each		7	1	7	100%	\$1 818	\$12 727	\$12 727	
	3	endotracheal tube sz 7.5	1 each		1	1	1	100%	\$5 476	\$5 476	\$5 476	
	3	syringe 20cc	1 each	endotrach tube	1	1	1	100%	\$0 218	\$0 218	\$0 218	
	3	syringe and needle 5cc	1 each	thiopent & H2O	1	1	1	100%	\$0 082	\$0 082	\$0 082	
	3	syringe and needle 2cc	1 each	other drugs	1	12	1	100%	\$0 064	\$0 764	\$0 764	
	3	IV set	1 each	saline & Dex 5%	1	1	1	100%	\$0 291	\$0 291	\$0 291	
	3	branula	1 each	saline & Dex 5%	1	1	1	100%	\$0 864	\$0 864	\$0 864	
	3	gloves non sterile	1 pair		1	1	1	100%	\$0 087	\$0 087	\$0 087	
	3	swabs small ratex 4 x4"	roll of 36 x100yd		0.0011	10	0.011	100%	\$8 149	\$0 090	\$0 090	
	3	swabs abdominal large 12 x12	roll of 36 x100yd		0.03	5	0.15	100%	\$8 149	\$1 222	\$1 222	
	3	plastic bags leakproof large	1 each		3	1	3	100%	\$0 018	\$0 055	\$0 055	
	3	paper masks	1 each		1	1	1	100%	\$0 033	\$0 033	\$0 033	
	3	paper caps	1 each		1	1	1	100%	\$0 085	\$0 085	\$0 085	
	3	elastoplast roll	roll of 3		0.25	1	0.25	100%	\$1 091	\$0 273	\$0 273	
	3	adhesive tape roll	roll of 1 x10yd		0.1	1	0.1	100%	\$1 309	\$0 131	\$0 131	
	3	jub hibitens	5000 ml		0.004	1	0.004	100%	\$49 091	\$0 196	\$0 196	
3	KY jelly tube	tube of 4.2 gm		0.05	1	0.05	100%	\$2 727	\$0 136	\$0 136		
3	spirits 5cc	5000 ml		0.001	1	0.001	100%	\$5 455	\$0 005	\$0 005		
if vomiting	3	syringe and needle 2cc	1 each	prochlorperazine	1	1	1	100%	\$0 064	\$0 064	\$0 064	
Average Cost per Case											\$23 326	

Lacerations

SOURCE MODIFIED KENYA STGs

Note	Level of Care	Drug	Route	Dose	Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
											Median Unit Cost	Cost per Episode	W Aver T Cost
	2	lidocaine 1%	SQ	5 ml	vial	1	1	50 ml	0 1	100 0%	\$0 345	\$0 035	\$0 035
	2	paracetamol	PO	1 g	tablet	3	3	500 mg	2	100 0%	\$0 004	\$0 074	\$0 074
Average Cost per Case												\$0 109	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (If IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
	2	syringe and needle 5cc	1 each	lidocaine	1	1	1	100%	\$0 082	\$0 082	\$0 082
	2	sutures chromic or plain catgut	1 each		3	1	3	100%	\$1 818	\$5 454	\$5 454
	2	swabs, small ratex, 4 x4"	roll of 36 x100yd			4	0	100%	\$8 149	\$0 000	\$0 000
Average Cost per Case										\$5 536	

Postpartum hemorrhage

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
	2	oxytocin	IV	20	IU	amp	1	1	10 IU	2	100 0%	\$0 137	\$0 275	\$0 275
	2	normal saline	IV	500	ml	bottle	4	1	1000 ml	0 5	100 0%	\$1 145	\$2 291	\$2 291
Average Cost per Case													\$2 565	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (If IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
	2	IV set	1 each	saline	1	1	1	100%	\$0 291	\$0 291	\$0 291
	2	branula	1 each	saline	1	1	1	100%	\$0 864	\$0 864	\$0 864
	2	syringe and needle 2cc	1 each		1	1	1	100%	\$0 064	\$0 064	\$0 064
	2	gloves sterile	1 pair			1	1	100%	\$0 600	\$0 600	\$0 600
	2	gloves non sterile	1 pair			1	1	100%	\$0 087	\$0 087	\$0 087
cross match	3	glass tube blood red top	1 each			1	1	0%	\$0 209	\$0 209	\$0 000
	3	glass slide	1 each			1	1	0%	\$0 026	\$0 026	\$0 000
hemoglobin	3	glass tube capillary	1 each			1	1	100%	\$0 041	\$0 041	\$0 041
	3	lancet	1 each			1	1	100%	\$0 030	\$0 030	\$0 030
Average Cost per Case										\$1 977	

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Mastitis

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
first line	2	amoxicillin	PO	250	mg	cap	3	7	250 mg	1	90 0%	\$0 029	\$0 617	\$0 555
second line with incision & drainage	3	cloxacillin	PO	500	mg	cap	4	7	250 mg	2	10 0%	\$0 030	\$1 674	\$0 167
	3	lidocaine 1%	SQ	5	ml	vial	1	1	50 ml	0 1	50 0%	\$0 345	\$0 035	\$0 017
Average Cost per Case													\$0 740	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (If IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
incision & drainage	3	syringe and needle 5cc	1 each	lidocaine	1	1	1	50%	\$0 082	\$0 082	\$0 041
	3	scalpel blades sz 23	1 each		1	1	1	50%	\$0 082	\$0 082	\$0 041
	3	swabs small ratex 4 x4	roll of 36 x100yd		0 0011	7	0 0077	50%	\$8 149	\$0 063	\$0 031
	3	adhesive tape roll	roll of 1 x10yd		0 04	5	0 2	50%	\$1 309	\$0 262	\$0 131
Average Cost per Case										\$0 244	

UTI

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
non pregnant case or alternative	2	cotrimoxazole	PO	1600/320	mg	tablet	1	1	400mg/80mg	4	81.0%	\$0.014	\$0.055	\$0.044
	2	amoxicillin	PO	3	g	cap	1	1	250 mg	12	9.0%	\$0.029	\$0.352	\$0.032
pregnant case or alternative	2	amoxicillin	PO	500	mg	cap	3	12	250 mg	2	9.0%	\$0.029	\$2.114	\$0.190
	2	erythromycin	PO	500	mg	tablet	3	12	250 mg	2	1.0%	\$0.049	\$3.521	\$0.035
Average Cost per Case													\$0.301	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (if IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
Average Cost per Case									\$0.000		

Preclampsia/Eclampsia

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
preeclampsia	3	methyl dopa	PO	250	mg	tablet	4	28	250 mg	1	90 0%	\$0 036	\$3 991	\$3 592
	3	phenobarbitone	PO	30	mg	tablet	3	28	30 mg	1	90 0%	\$0 002	\$0 182	\$0 164
eclampsia	3	diazepam	IVP	20	mg	amp	1	1	10mg/2ml	1	10 0%	\$0 109	\$0 109	\$0 011
	3	diazepam	IV	40	mg	amp	1	5	10mg/2ml	2	10 0%	\$0 109	\$1 095	\$0 109
	3	dextrose 5%	IV	500	ml	bottle	1	5	1000 ml	0 5	10 0%	\$1 182	\$2 955	\$0 295
	3	hydralazine	IVP	20	mg	amp	1	1	20 mg/ml	1	10 0%	\$0 246	\$0 246	\$0 025
	3	hydralazine	IV	40	mg	amp	1	5	20 mg/ml	2	10 0%	\$0 246	\$2 464	\$0 246
	3	dextrose 5%	IV	500	ml	bottle	1	5	1000 ml	0 5	10 0%	\$1 182	\$2 955	\$0 295
Average Cost per Case														\$4 738

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (if IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
preeclampsia	3	urine dipsticks	bottle of 100		0 01	1	0 01	100%	\$7 991	\$0 080	\$0 080
eclampsia	3	IV set	1 each	diazepam	1	2	2	10%	\$0 291	\$0 582	\$0 058
	3	branula	1 each	diazepam	1	2	2	10%	\$0 864	\$1 727	\$0 173
	3	synnrg and needle 5cc	1 each	diazepam	1	5	5	10%	\$0 082	\$0 409	\$0 041
	3	IV set	1 each	hydralazine	1	2	2	10%	\$0 291	\$0 582	\$0 058
	3	branula	1 each	hydralazine	1	2	2	10%	\$0 864	\$1 727	\$0 173
	3	synnrg and needle, 2cc	1 each	hydralazine	1	5	5	10%	\$0 064	\$0 318	\$0 032
Average Cost per Case											\$0 614

Incomplete Abortion

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
if in shock	3	ergometrine	IM	0.5	mg	amp	1	1	0.5 mg	1	100.0%	\$0.132	\$0.132	\$0.132
	3	ampicillin	PO	500	mg	cap	4	7	250 mg	2	100.0%	\$0.028	\$1.582	\$1.582
	3	metronidazole	PO	400	mg	tablet	3	7	200 mg	2	100.0%	\$0.005	\$0.210	\$0.210
	3	dextrose and normal saline	IV	500	ml	bottle	2	1	500 ml	1	10.0%	\$0.001	\$0.002	\$0.000
Average Cost per Case													\$1.924	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (If IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)			
									Median Unit Cost	Cost per Episode	W Aver T Cost	
if in shock	3	syringe and needle 2cc	1 each		1	1	1	100%	\$0.064	\$0.064	\$0.064	
	3	gloves sterile	1 pair		2	1	2	100%	\$0.600	\$1.200	\$1.200	
	3	IV set	1 each		1	1	1	10%	\$0.291	\$0.291	\$0.029	
	3	branula	1 each		1	1	1	10%	\$0.864	\$0.864	\$0.086	
Average Cost per Case											\$1.379	

SS

Puerperal Sepsis

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
first line	3	amoxicillin	PO	500	mg	cap	3	7	250 mg	2	90 0%	\$0 029	\$1 233	\$1 110
	3	metronidazole	PO	200	mg	tablet	3	7	200 mg	1	90 0%	\$0 005	\$0 105	\$0 095
	3	paracetamol	PO	1	g	tablet	3	7	500 mg	2	90 0%	\$0 004	\$0 173	\$0 156
second line	3	ampicillin	IM	500	mg	vial	4	7	500 mg	1	10 0%	\$0 255	\$7 153	\$0 715
	3	gentamycin	IM	80	mg	amp	3	7	40 mg/ml	2	10 0%	\$0 122	\$5 139	\$0 514
	3	metronidazole suspension	IV	500	mg	bottle	3	7	500 mg/100m	1	10 0%	\$0 764	\$16 036	\$1 604
	3	dextrose 5%	IV	500	ml	bottle	1	7	1000 ml	0 5	10 0%	\$1 182	\$4 136	\$0 414
Average Cost per Case													\$4 607	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (If IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)			
									Median Unit Cost	Cost per Episode	W Aver T Cost	
second line	3	IV set	1 each	metronidazole	1	3	3	10%	\$0 291	\$0 873	\$0 087	
	3	IV set	1 each	dextrose	1	3	3	10%	\$0 291	\$0 873	\$0 087	
	3	branula	1 each	metronidazole & dextrose	1	3	3	10%	\$0 864	\$2 591	\$0 259	
	3	syringe and needle 2cc	1 each	ampicillin	1	28	28	10%	\$0 064	\$1 782	\$0 178	
	3	syringe and needle, 2cc	1 each	gentamycin	1	21	21	10%	\$0 064	\$1 336	\$0 134	
Average Cost per Case											\$0 745	

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Endometritis

SOURCE

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
												Average Cost per Case		\$0 000

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (If IMor IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
									Average Cost per Case		\$0 000

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Safe and Clean Delivery

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
delivery	2	ergometrine	IV/IM	0.5	mg	amp	1	1	0.5 mg	1	100.0%	\$0.132	\$0.132	\$0.132
	2	paracetamol	PO	1	g	tablet	3	2	500 mg	1	100.0%	\$0.004	\$0.025	\$0.025
neonatal care	2	tetracycline ointment 1%	TOP	2.5	g	tube	1	1	3.5 g	1	100.0%	\$0.127	\$0.127	\$0.127
	2	BCG vaccine	ID	0.1	ml	amp	1	1	NA	1	100.0%	\$0.000	\$0.000	\$0.000
	2	polio oral vaccine	PO	3	drop	vial	1	1	NA	0.1	100.0%	\$0.000	\$0.000	\$0.000
Average Cost per Case													\$0.284	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (if IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
delivery	2	gloves sterile	1 pair		6	1	6	100%	\$0.600	\$3.600	\$3.600
	2	jik	5 L		0.2	1	0.2	100%	\$5.091	\$1.018	\$1.018
	2	cord clamp	1 each		1	1	1	100%	\$0.253	\$0.253	\$0.253
neonatal care	2	syringe and needle, 1cc	1 each	BCG vaccine	1	1	1	100%	\$0.064	\$0.064	\$0.064
Average Cost per Case										\$4.935	

Neonatal Sepsis

SOURCE KENYA STGs

Note	Level of Care	Drug	Route	Dose	Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
											Median Unit Cost	Cost per Episode	W Aver T Cost
if hospital acquired	3	penicillin G sodium	IM	125000	U	2	12	NA		99.0%	\$0.000	\$0.000	\$0.000
	3	gentamycin	IM	6.25	mg	2	12	40 mg/ml	0.156	99.0%	\$0.122	\$0.458	\$0.454
	3	amikacin	IM	18.75	mg	2	12	500 mg/ml	0.038	1.0%	\$0.030	\$0.027	\$0.000
Average Cost per Case												\$0.454	

based on a 2.5 kg neonate

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (if IM or IV)	# Units per Time	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
								Median Unit Cost	Cost per Episode	W Aver T Cost
if hospital acquired	3	syringe and needle 2cc	1 each	penicillin G	1	24	99%	\$0.064	\$1.527	\$1.512
	3	syringe and needle 1cc	1 each	gentamycin	1	24	99%	\$0.064	\$1.527	\$1.512
	3	syringe and needle 1cc	1 each	amikacin	1	24	1%	\$0.064	\$1.527	\$0.015
Average Cost per Case									\$3.039	

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Puerperal Sepsis

Source KENYA CES Survey

HOME PAGE

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	% Cases Treated	Formulation Supplied	Units Per Dose	Total Units	Local Med (\$)		
													Median Unit Cost	Cost per Episode	W Aver T Cost
first line	3	amoxycillin	PO	500	mg	cap	3	7	28%	250 mg	2	42	0 029	1 233	0 345
	3	metronidazole	PO	200	mg	tablet	3	7	60%	200 mg	1	21	0 005	0 105	0 063
	3	paracetamol	PO	1	g	tablet	3	7	60%	500 mg	2	42	0 004	0 173	0 104
second line	3	ampicillin	IM	500	mg	vial	4	7	12%	500 mg	1	28	0 255	7 153	0 858
	3	gentamycin	IM	80	mg	amp	3	7	64%	40 mg/ml	2	42	0 122	5 139	3 289
	3	metronidazole suspension	IV	500	mg	bottle	3	7	24%	500 mg/100ml	1	21	0 764	16 036	3 849
	3	dextrose 5%	IV	500	ml	bottle	1	7	20%	1000 ml	0 5	3 5	1 182	4 136	0 827
actual practice	3	benzathine penicillin G	IM	2 4	MU	vial	1	1	40%	2 4 MU	1	1	0 510	0 510	0 204
	3	penicillin G sodium	IM	125000	U	vial	2	12	20%	NA	1	24			
	3	ampicillin	PO	500	mg	cap	4	7	32%	250 mg	2	56	0 028	1 582	0 506

Avg Episode Cost 10 046

Note

Note	Level of Care	Supply Item	Name of Associated Drug(s) (If IM or IV)	Quantity/ Admin	# Admins	Total Quantity	/ Cases Treated	Supply Unit	# Units/ Admin	Total Units	Local Med (\$)		
											Median Unit Cost	Cost per Episode	W Aver T Cost
second line	3	IV set	metronidazole	1	3	3	24%	1 each	1	3	0 291	0 873	0 209
	3	IV set	dextrose	1	3	3	20%	1 each	1	3	0 291	0 873	0 175
	3	branula	metronidazole & dextrose	1	3	3	24%	1 each	1	3	0 864	2 591	0 622
	3	syringe and needle, 2cc	ampicillin	1	28	28	12%	1 each	1	28	0 064	1 782	0 214
	3	syringe and needle, 2cc	gentamycin	1	21	21	64%	1 each	1	21	0 064	1 336	0 855
actual practice	3	syringe and needle, 2cc	benzathine penicillin G	1	1		40%	1 each	1	1	0 064	0 064	0 025
	3	syringe and needle, 2cc	penicillin G sodium	1	24		20%	1 each	1	24	0 064	1 527	0 305

Avg Episode Cost 2 406

ANNEX ONE CES SPREADSHEETS
Part Two Basic Medical Equipment Package
for RH Services and Estimated Costs

ANNEX ONE CES SPREADSHEETS
Part Three Demographic, Epidemiologic and Service Utilization Data
Regarding RH Services in Kenya

BASIC COUNTRY DATA

	Estimate	Year	Source
Population			
total (000s)	27,500	1995	CBS
women 15-49 (000s)	6,581	1994	based on rates in MMBS T3 1
in malaria endemic area (000s)			
Births			
crude birth rate (per 1000)	42.8	1995	CBS
annual births (000s)	1,177	1995	computed
Public Sector Service Utilization			
all admissions			
for ICD-9 codes 6 10-6 752	410,425	1995	1995 IPDS **
total OPD visits (000s)	37,637	1995	HIS p 24 corrected for 41.73% response rate
female (000s)	19,157	1995	based on 50.9% new female visits in hospital OPD
hospital general OPD visits (000s)	1,974	1995	1995 HWDS *
female (000s)	1,006	1995	1995 HWDS *
as % of total OPD visits	5.2%	1995	combining HIS and HWDS *
hospital MCH/FP new visits (000s)	244,631	1995	1995 HWDS *
hospital MCH/FP total visits (000s)	875,697	1995	1995 HWDS *
visits per new attender	3.6	1995	1995 HWDS *

* corrected for 16% missing months and 38/97 missing hospitals (N B missing KNH, Pumwani)

REPRODUCTIVE HEALTH SERVICE UTILIZATION ESTIMATES

	Currently in community				Currently in public facilities			
	(000s)	%	Note	Source	(000s)	%	Note	Source
Reproductive Experience								
total births	1177 0				NA			
in health facility	519 1	44 1%	in any health facility	DHS T8 4	400 2	34 0%	in public health facility	DHS T8 4
receiving ANC								
from HW	1117 0	94 9%	ANC by health worker	DHS T8 1	907 4	77 1%	using public ratio of facility births	
from TBA	8 2	0 7%	ANC by TBA	DHS T8 1	NA	NA		
Antenatal Care								
basic care	1117 0		ANC by any HW	DHS T8 6	907 4		ANC in public facility	
prevention								
iron/folate supplement	1007 5	90 2%	assume same as tetanus		818 5	90 2%	assume same as tetanus	
tetanus prevention	1007 5	90 2%	currently receiving any injections	DHS T8 3	818 5	90 2%	assume same % as 93 DHS	
treatment								
fever, discomfort	111 7	10 0%	assumption		90 7	10 0%	assumption	
malana	212 2	19 0%	14% 24% malana in pregnancy	QOS T9	172 4	19 0%	14% 24% malana in pregnancy	QOS T9
resistant malana	21 2	1 9%	assume 10% of malana cases		17 2	1 9%	assume 10% of malana cases	
hookworm	0 0	NA	not included		0 0	NA	not included	
Normal Delivery								
total deliveries	1177 0				NA			
in health facilities	468 7	39 8%	assume same rate normal as public	HWDS	365 4	31 0%	minus 9 7% complication rate	HWDS
Treatment of Complications								
maternal complication								
complications of abortion	31 1	6 0%	assume same rate as public		24 0	6 0%	ICD 9 632, 634 639 9	IPDS
Caesarian section	27 0	5 2%	survey data applied to facility births	DHS T8 6	21 6	5 4%	9 2% of public hospital admissions	MMBS T6 2
dysfunctional labor	31 1	6 0%	assume 6% as in MSA	QOS T9	24 0	6 0%	rate from hospital reports	HWDS
hemorrhage	22 7	4 4%	assume same rate as public		17 5	4 4%	estimated from HWDS	
lacerations	51 9	10 0%	assume same rate as public		40 0	10 0%	assume 6% as in MSA	
endometritis	NA				NA		ICD 9 640 641 9, 666 667 1	IPDS
mastitis	1 1	0 2%	assume same rate as public		0 8	0 2%	assume 10% of births	
pre-eclampsia/eclampsia	2 0	0 4%	assume same rate as public		1 5	0 4%	ICD 9 611 0 (inpatient)	IPDS
puerperal sepsis	5 8	1 1%	assume same rate as public		4 5	1 1%	ICD 9 642 642 9 (inpatient)	IPDS
urinary tract infection	586 4		using private ration of facility births		452 1	2 4%	ICD 9 670 670 9	IPDS
neonatal complication							2 36% female OPD visits	HIS p 24
neonatal sepsis	5 2	1 0%	assume 1% of births		4 0	1 0%	assume 1% of births	
Sexually Transmitted Infections								
syphilis	44 7	4 0%	2 9% of ANC applied to F 15 49	NRHS p 32	36 3	4 0%	2 9% of ANC applied to F 15 49	NRHS p 32
gonorrhoea/chlamydia	67 0	6 0%	3 25% of ANC applied to F 15 49	NRHS p 32	145 6	0 8%	0 76% female OPD visits	HIS p 24
pelvic inflammatory disease	13 8		using private ratio of facility births		54 4	6 0%	3 25% of ANC applied to F 15 49	NRHS p 32
					10 7		ICD 9 614 614 9 (inpatient)	IPDS

CBS Central Bureau of Statistics 1995
DHS Demographic and Health Survey 1993
HIS Health Information System Annual Report 1995
HWDS HIS Hospital Workload Data Summary 1995
IPDS HIS Inpatient Diagnosis Summary 1995
MMBS Kenya Maternal Mortality Baseline Survey 1996

NRHS National Reproductive Health Strategy 1996
QOS A Question of Survival 1997
MSA Machakos Surveillance Area

corrected for 16% missing months & 38/97 missing hospitals (N B missing KNH Pumwani)
completeness in reporting by comparing HWDS C section estimates = 15 30%

Health Facilities Offering RH Services

	Total Facilities						Public Sector Facilities					
Antenatal Care	<u># facilities</u>						<u># facilities</u>					
hospitals	191						97					
health centers	631						487					
maternity/nursing home	103						6					
dispensaries	2,149						1,322					
Normal Delivery	<u>Antenatal # 10-bed units</u>		<u>Labor/Delivery # 2-bed units</u>		<u>Post-partum # 10-bed units</u>		<u>Antenatal # 10-bed units</u>		<u>Labor/Delivery # 2-bed units</u>		<u>Post-partum # 10 bed units</u>	
	<u>one</u>	<u>two</u>	<u>one</u>	<u>two</u>	<u>one</u>	<u>two</u>	<u>one</u>	<u>two</u>	<u>one</u>	<u>two</u>	<u>one</u>	<u>two</u>
hospitals	100	91	100	91	100	91	50	47	50	47	50	47
health centers			631						487			
maternity/nursing home	53	50	53	50	53	50	3	3	3	3	3	3
Treatment of Complications	<u># facilities</u>						<u># facilities</u>					
hospital theaters	191						97					
Sexually Transmitted Infections	<u># facilities</u>						<u># facilities</u>					
hospitals	191						97					
health centers	631						487					
dispensaries	2,149						1,322					

Source

The Health Sector in Kenya, 1995

ANNEX ONE CES SPREADSHEETS

Part Four Estimated Requirements of Drugs/Medical Supplies, and Medical Equipment for RH Services in the Community and in Public Health Facilities in Kenya

Reproductive Health Equipment Costs

	Package Cost	Total Facilities		Public Facilities	
		# Needed	Total Cost	# Needed	Total Cost
Basic MCH Clinic					
basic package	\$427	3074	\$1,313,492	1912	\$816,980
Labor, Delivery, Postnatal Care					
labor/delivery equipment	\$1,537	1066	\$1,638,162	640	\$983,512
antenatal area equipment	\$200	435	\$86,974	153	\$30,591
postnatal area equipment	\$130	435	\$56,588	153	\$19,903
Hospital Equipment					
maternity theater equipment	\$1,463	191	\$279,373	97	\$141,881
surgical package	\$3,956	191	\$755,630	97	\$383,749

Reproductive Health Commodity Costs

	Cost per Case Treated			Average Weighted Case Cost			Currently In the Community				Currently In Public Facilities			
	Drugs	Supplies	Total	Drugs	Supplies	Total	# Cases	Drugs	Supplies	Total	# Cases	Drugs	Supplies	Total
Antenatal Care														
basic care				\$1 02	\$3 73	\$4 75	1,116,973	\$1,138,419	\$4,164,685	\$5,303,103	907,438	\$924,860	\$3,383,422	\$4,308,283
screening tests		\$4 63	\$4 63											
anemia prevention	\$1 02		\$1 02											
tetanus prevention	\$0 00		\$0 00											
treatment				\$0 04	\$0 01	\$0 04								
fever, discomfort	\$0 05		\$0 05				111,697	\$5,532	\$0	\$5,532	90,744	\$4,494	\$0	\$4,494
malaria	\$0 12	\$0 05	\$0 17				212,225	\$25,814	\$10,959	\$36,773	172,413	\$20,972	\$8,903	\$29,874
resistant malaria	\$2 08		\$2 08				21,222	\$44,240	\$0	\$44,240	17,241	\$35,941	\$0	\$35,941
hookworm	\$0 00		\$0 00				0	\$0	\$0	\$0	0	\$0	\$0	\$0
Normal Delivery														
delivery				\$0 28	\$4 93	\$5 22	1,177,000	\$334,311	\$5,807,960	\$6,142,271	365,364	\$103,777	\$1,802,907	\$1,906,684
maternal care	\$0 16	\$4 87	\$5 03											
neonatal care	\$0 13	\$0 06	\$0 19											
Treatment of Complications														
incomplete abortion				\$1 92	\$1 38	\$3 30	31,096	\$59,841	\$42,884	\$102,724	23,974	\$46,136	\$33,062	\$79,198
routine treatment	\$1 92	\$1 26	\$3 19											
if in shock	\$0 00	\$1 15	\$1 16											
Caesarian section				\$14 86	\$28 26	\$43 12	26,991	\$401,058	\$762,780	\$1,163,838	21,610	\$321,098	\$610,703	\$931,801
delivery & neonatal care	\$0 28	\$4 93	\$5 22											
C Section	\$14 24	\$23 26	\$37 50											
treatment of vomiting	\$1 33	\$0 06	\$1 39											
dysfunctional labor				\$0 73	\$1 31	\$2 04	31,143	\$22,678	\$40,770	\$63,448	24,011	\$17,484	\$31,432	\$48,917
hemorrhage				\$2 57	\$1 98	\$4 54	22,711	\$58,265	\$44,890	\$103,154	17,510	\$44,921	\$34,609	\$79,530
hemoglobin		\$0 07	\$0 07											
cross matching		\$0 23	\$0 23											
lacerations				\$0 11	\$5 54	\$5 64	51,906	\$5,649	\$287,341	\$292,990	40,018	\$4,355	\$221,532	\$225,888
endometritis	\$0 00	\$0 00	\$0 00				0	\$0	\$0	\$0	0	\$0	\$0	\$0
mastitis				\$0 74	\$0 24	\$0 98	1,077	\$796	\$263	\$1,059	830	\$614	\$203	\$817
first line treatment	\$0 62		\$0 62											
second line treatment	\$1 71	\$0 49	\$2 20											
neonatal sepsis				\$0 45	\$3 04	\$3 49	5,191	\$2,356	\$15,776	\$18,131	4,002	\$1,816	\$12,163	\$13,979
community acquired	\$0 46	\$3 05	\$3 51											
hospital acquired	\$0 03	\$1 53	\$1 55											
pre-eclampsia/eclampsia				\$4 74	\$0 61	\$5 35	2,001	\$9,479	\$1,229	\$10,709	1,542	\$7,308	\$948	\$8,256
pre-eclampsia	\$4 17	\$0 08	\$4 25											
eclampsia	\$9 82	\$5 35	\$15 17											
puerperal sepsis				\$4 61	\$0 75	\$5 35	5,824	\$26,831	\$4,342	\$31,173	4,490	\$20,686	\$3,347	\$24,033
first line treatment	\$1 51		\$1 51											
second line treatment	\$32 46	\$7 45	\$39 92											
urinary tract infection				\$0 30	\$0 00	\$0 30	586,417	\$176,738	\$0	\$176,738	452,113	\$136,260	\$0	\$136,260
non pregnant	\$0 41		\$0 41											
pregnant	\$5 64		\$5 64											
Sexually Transmitted Infection														
syphilis				\$2 91	\$0 72	\$3 63	44,879	\$130,027	\$32,226	\$162,253	36,298	\$105,635	\$26,180	\$131,815
first line treatment	\$2 56	\$0 73	\$3 29											
second line treatment	\$0 55		\$0 55											
penicillin allergy	\$5 48		\$5 48											
gonorrhoea/chlamydia				\$1 51	\$0 00	\$1 51	67,018	\$101,270	\$0	\$101,270	145,596	\$220,006	\$0	\$220,006
non pregnant	\$1 20		\$1 20											
pregnant	\$4 28		\$4 28											
pelvic inflammatory disease				\$1 68	\$0 00	\$1 68	13,835	\$23,302	\$0	\$23,302	10,667	\$17,965	\$0	\$17,965
non pregnant	\$1 40		\$1 40											
pregnant	\$4 21		\$4 21											

ANNEX TWO SURVEY FORMS

REPRODUCTIVE HEALTH COMMODITIES STUDY

HEALTH FACILITY SURVEY FORM

District		Health Facility	
Facility Type (PH=provincial hospital, DH=district hospital, OH=Other hospital, MH=maternity or nursing home, HC=health center, DI=dispensary)			
Facility Administration (G=government, M=mission, N=Other NGO, P=owned by company or private individual)			
Date		Data collector	

FACILITY AND STAFFING

The study team should hold an introductory meeting with the key members of the hospital staff (medical superintendent, hospital matron, chief supplies officer, chief pharmacist) or with the medical and nursing officers in charge of a lower level facility. At this briefing, explain the purpose of the survey, and ensure the staff that its purpose is not to rate their facility. After completing the briefing, explain that you would like to ask some general questions about the facility, its staff, the reproductive health services offered, and recent utilization. The staff may need to assemble the data for Questions 1-16 from a variety of sources.

1	What is the catchment population of this facility? <i>Enter population if not known enter 0</i>	
2	Have you calculated the antenatal care coverage rate for this facility? If yes, what is this rate? <i>Enter percent if not known enter 0</i>	
3	Have you calculated the percent of deliveries in your catchment area that take place in this facility? If yes, what is this percent? <i>Enter percent if not known enter 0</i>	
4	What is the total number of beds in this facility (including maternity)?	
5	How many of those beds are regularly used for the following services? <i>Enter number of beds or 0 if no beds are assigned for this purpose</i>	Number of beds
	a for labor and waiting before delivery	
	b for delivery	
	c for post-natal stay	
6	What is the average occupancy rate of the beds used for post-natal stay? <i>Enter percent</i>	

7	What is the total number of health providers currently working at this facility who regularly provide care for women during pregnancy or delivery?	<i>Number of staff</i>
a	OB/Gyn Specialists	
b	GPs or other medical specialties	
c	Clinical Officers	
d	Nurses with midwifery training	
e	Nurses without midwifery experience	
f	Midwives	

SERVICES

8	Which of the following services are provided at this facility? <i>Read and ask about each service separately</i>	<i>check box</i> <input checked="" type="checkbox"/>	
a	Antenatal care	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
b	Treatment of STDs	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
c	Normal delivery care	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
d	Manual vacuum aspiration (MVA)	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No

9	Which of the following complications can be managed at this facility? <i>Read and ask about each complication separately</i>	<i>check box</i> <input checked="" type="checkbox"/>	
a	Care for pre-eclampsia	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
b	Care for eclampsia	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
c	Care for obstructed or prolonged labor	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
d	Care for maternal hemorrhage	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
e	Caesarian section	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
f	Management of abortion complications/incomplete delivery	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
g	Care for maternal sepsis	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No

If this facility does not perform Caesarian sections, skip to Q 12

10	How many surgical theaters in this facility are used on a regular basis for performing Caesarian sections?	
11	How many doctors regularly perform Caesarian sections in this facility?	

12 Which of the following laboratory tests are currently performed at this facility? <i>Read and ask about each lab test separately</i>	check box <input checked="" type="checkbox"/>	
a Malaria smear	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
b Urine analysis for glucose and protein	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
c Urine culture and sensitivity	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
d Hemoglobin	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
e Blood group typing and RH cross reactivity	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
f Blood culture and sensitivity	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
f Stool for ova and parasites	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No

13 Are maternal and child services integrated with other services (antenatal, postpartum, family planning services all provided on a daily basis)?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
--	--------------------------------	-------------------------------

14 Do you routinely refer high-risk antenatal mothers to another facility?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
15 Do you often refer complications to another facility?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
16 How many hours does it usually take to travel by car to the nearest referral facility? <i>Enter number of hours</i>		

Request to see the service utilization records for the previous calendar year (based on regular records, logs or standard forms, for example, the MOH Workload Forms, Inpatient Morbidity Forms, or Outpatient Morbidity Forms) Record the total number of patient consultations during that year for the each following categories of reproductive health services for which data are available. If annual data are not available for a given condition, enter N/A

If no data from the previous year are available, record the number of consultations per month for each condition during the previous three months for which data are available. Enter N/A if there are no data

17 Consultations for RH Problems	Total consultations reported during the previous calendar year	Number of monthly consultations [Enter month for which data apply]		
Antenatal care				
Deliveries				
Caesarian sections				
UTI				
Syphilis (or GUD)				
Gonorrhea/chlamydia (or vaginal discharge)				

17 Consultations for RH Problems	<i>Total consultations reported during the previous calendar year</i>	<i>Number of monthly consultations [Enter month for which data apply]</i>		
PID				

INFRASTRUCTURE AND EQUIPMENT

Province		District		Health Facility	
Facility Type (PH=provincial hospital, DH=district hospital, OH=Other hospital, MH=maternity or nursing home, HC=health center, DI=dispensary)					
Date		Data collector			

Explain that you would like you to see the facilities and equipment used here in providing MCH services Visit all MCH areas, delivery rooms, maternity theaters, and the laboratory to observe the presence and condition of the following infrastructure and equipment

Code each item of physical infrastructure based on its condition on the day of the visit

0 = Not available

1 = Available but not satisfactory

2 = Available and satisfactory

Code as not satisfactory items which in your opinion are not functional, missing parts, unhygienic, or otherwise sub-standard

18	Physical Infrastructure	<i>0 = Not available</i> <i>1 = Available but not satisfactory</i> <i>2 = Available and satisfactory</i>
	Refrigerator	
	Functioning laboratory facilities including microscope, centrifuge, and clean water supply	
	Functioning delivery room including bed, linen, lighting, and clean water supply	
	Functioning operating theater including operating table, shadowless lamp, trolley, suction apparatus, anesthesia equipment, oxygen, nitrous oxide, and emergency light	

Next, visit the MCH antenatal clinic in this facility Count how many of the following items of basic medical equipment are present, and evaluate their condition Enter ticks for each item in the appropriate box as you proceed, and sum up the totals for each item at the end

Indicate in the appropriate column the number of items that are present and in satisfactory condition, and the number that are present but not satisfactory Code as not satisfactory items which are not functional, missing parts, unhygienic, or otherwise sub-standard

After completing all equipment inventories that apply to this facility, ask the administrator to see medical equipment purchasing records for the previous year If purchasing records are not kept in the health facility, there may be copies in the District Office For any equipment item purchased during the previous year, record the most recent purchase price Prices should NOT be estimated, but based on actual recorded values If no purchases were made, or records cannot be located, leave items blank

FOR ALL FACILITIES				
19	Basic MCH Equipment	Number available and satisfactory	Number available and not satisfactory	Last purchase price
	gestational wheel			
	scale, adult			
	scale, baby			
	stethoscope			
	stethoscope, fetal			
	sphygmomanometer			
	tape measure			
	thermometer			

Next, if this facility handles normal births, visit the labor and delivery area and the maternity ward. Count the following items of equipment needed for normal delivery and evaluate their condition. Enter ticks as you proceed, and sum up the totals for each item at the end.

Indicate in the appropriate column the number of items that are present and in satisfactory condition, and the number that are present but not satisfactory. Code as not satisfactory items which are not functional, missing parts, unhygienic, or otherwise sub-standard.

FOR ALL FACILITIES PERFORMING NORMAL DELIVERIES				
20	Equipment for Normal Delivery	Number available and satisfactory	Number available and not satisfactory	Last purchase price
	airway			
	ambu bag, baby			
	blanket, baby			
	bowl, kidney stainless steel 10"			
	bowl 36"			
	forceps, artery 8" straight			
	gestational wheel			
	needle holder 7"			
	scale, adult			
	scale, baby			
	scissors, cord 10 cm			
	scissors, episiotomy 12.5 cm			
	scrub brush, surgeon's			
	sheet, Macintosh			

FOR ALL FACILITIES PERFORMING NORMAL DELIVERIES				
20	Equipment for Normal Delivery	Number available and satisfactory	Number available and not satisfactory	Last purchase price
	speculum, vaginal			
	sphygmomanometer			
	stethoscope			
	stethoscope, fetal			
	suction machine			
	tape measure			
	thermometer			
	tongue blade			
	towel, baby drying			

Finally, if this facility handles obstetric surgery, visit the maternity theater. Be sure to check for equipment that may have been sent to the Central Sterilizing Supply Unit for sterilization. Count the following items of surgical equipment and evaluate their condition. Enter ticks for each item in the appropriate box as you proceed, and sum up the totals for each item at the end.

Indicate in the appropriate column the number of items that are present and in satisfactory condition, and the number that are present but not satisfactory. Code as not satisfactory items which are not functional, missing parts, unhygienic, or otherwise sub-standard.

FOR ALL HOSPITALS PERFORMING OBSTETRIC SURGERY				
21	Hospital Surgical Equipment	Number available and satisfactory	Number available and not satisfactory	Last purchase price
	airway, sm, med, lg			
	blade handle (bard parker #4)			
	boots, non static gum (pair)			
	bowl, lg stainless steel			
	cannula, Carmans IPAS double valve			
	cannula, Carmans IPAS single valve			
	cannula, flexible sz 10			
	cannula, flexible sz 4			
	cannula, flexible sz 5			
	cannula, flexible sz 6			
	cannula, flexible sz 7			
	cannula, flexible sz 9			
	cannula, flexible sz8			

FOR ALL HOSPITALS PERFORMING OBSTETRIC SURGERY

21 Hospital Surgical Equipment	<i>Number available and satisfactory</i>	<i>Number available and not satisfactory</i>	<i>Last purchase price</i>
curette, uterine double ended 7"			
curette, uterine sharp ended 9"			
dilator, Haggard's uterine (one set, size 3-16)			
forceps, artery 8" straight			
forceps, artery Chances (COF) 7"			
forceps, artery Dunhill (COF) 5"			
forceps, artery Spencer Wells 7"			
forceps, artery fine			
forceps, dissecting 7" toothed Lanes			
forceps, dissecting Trevors 7" nontoothed			
forceps, dissecting, nontoothed, fine			
forceps, dissecting, nontoothed, lg			
forceps, dissecting, toothed, fine			
forceps, dissecting, toothed, lg			
forceps, double toothed teneculum			
forceps, obstetric			
forceps, ovum (9") medium 2 med, 1lg			
forceps, sponge holding			
forceps, sponge holding (Lamley or Forester) 9"			
forceps, tissue green armetage			
forceps, tissue, Allis			
forceps, vassellum Trevors 9"			
forceps, vassellum Trevors 9"			
galli pot 6"			
handle, BardParker size 3			
kidney dish, lg			
kidney dish, sm			
laryngoscope			
mayo 6 1/2" straight			
mayo 7 1/2" curved			
needle holder, long			
pack, lg green			
retractor, doyens			
retractor, lagenback med			

FOR ALL HOSPITALS PERFORMING OBSTETRIC SURGERY

21 Hospital Surgical Equipment	<i>Number available and satisfactory</i>	<i>Number available and not satisfactory</i>	<i>Last purchase price</i>
scissors, mayo curved			
scissors, straight			
scrub brush			
sheet, plastic Macintosh			
speculum, Auvard 9"			
speculum, Simms 9" 1 lg, 1 sm			
speculum, Simms 9" 1 lg, 1 sm			
sponge holder			
suction end (metal)			
surgical gown			
towel clip			
towel, abdominal sheet			
towel, green			
tray, placenta			
trousers, surgical			
uterine sound graduated 12" double ended			
uterine sound graduated 12" single ended			
vacuum extractor, manual			
vest, surgical			
yankaur			

INVENTORY OF COMMODITIES

Province		District		Health Facility	
Facility Type (PH=provincial hospital, DH=district hospital, OH=Other hospital, MH=maternity or nursing home, HC=health center, DI=dispensary)					
Date		Data collector			

Visit the pharmacy or supply areas where drug and medical supply stock records are kept. If stock records exist, record the quantity currently in stock from stock records for each drug and medical supply item. If there are drug kits or bulk shipments unopened in the facility stores, be sure to count the quantities available in both the recorded quantity and the physical count.

*Enter the strength for each drug found (e.g., 250 mg or 30 mg/ml). If more than one strength is found, count the one with the highest stock level. **CONSIDER ANY BRAND NAME ITEMS TO BE THE SAME AS THEIR GENERIC EQUIVALENTS.** Next, physically count and record the quantity actually in stock. For tablets or capsules, record the quantity to the nearest half bottle.*

*After completing the inventory, ask the pharmacist or facility administrator to see drug and medical supply equipment purchasing records for the previous year. If purchasing records are not kept in the health facility, there may be copies in the District Office. For any drug or medical supply item purchased during the previous year, record the most recent purchase price. Prices should **NOT** be estimated, but based on actual recorded values. If no purchases were made, or records cannot be located, leave items blank.*

FOR ALL FACILITIES

22 Inventory of Basic Drugs			Recorded Quantity	Physical Count	Last Purchase Price
Name	Form	Strength?			
amoxicillin	cap				
augmentin	tablet				
benzathine penicillin	vial				
chloroquine phosphate	tablet				
doxycycline	cap				
erythromycin	tablet				
ferrous sulphate	tablet				
folic acid	tablet				
mebendazole	tablet				
metronidazole	tablet				
norfloxacin	tablet				
paracetamol	tablet				
probenecid	tablet				

FOR ALL FACILITIES PERFORMING NORMAL DELIVERIES					
23 Inventory of Additional Drugs for Delivery			Recorded Quantity	Physical Count	Last Purchase Price
Name	Form	Strength?			
cotrimoxazole	tablet				
ergometrine	amp				
lidocaine	ml				
normal saline	bottle				
oxytocin	amp				
tetracycline 1% ointment	tube				

FOR HOSPITALS OFFERING REFERRAL CARE OR OBSTETRIC SURGERY					
24 Inventory of Referral Drugs			Recorded Quantity	Physical Count	Last Purchase Price
Name	Form	Strength?			
amikacin	vial				
ampicillin	cap				
ampicillin	vial				
atropine	amp				
ciprofloxacin	tablet				
cloxacillin	cap				
crystalline penicillin	vial				
dextrose 5%	bottle				
dextrose and normal saline	bottle				
diazepam	amp				
gentamycin	amp				
hydralazine	amp				
methyl dopa	tablet				
metronidazole suspension	bottle				
neostigmine	amp				
pancurarium	amp				
pethidine	amp				
phenobarbitone	tablet				
prochlorperazine	amp				
sterile water	vial				
suxamethonium	amp				
thiopentone sodium	amp				

FOR ALL FACILITIES			
25 Inventory of Basic Medical Supplies	Recorded Quantity	Physical Count	Last Purchase Price
antenatal record			
glass slide			
glass tube, blood, red top			
glass tube, capillary			
lancet			
reagent for blood typing			
syringe and needle			
urine dipsticks (bottle of 100)			
VDRL kit			

FOR ALL FACILITIES PERFORMING NORMAL DELIVERIES			
26 Inventory of Additional Medical Supplies	Recorded Quantity	Physical Count	Last Purchase Price
branula			
cord clamps			
gauze, absorbent			
gloves, non-sterile (pair)			
gloves, sterile (pair)			
IV set			
jik 1 L			
sutures, chromic or plain catgut			

FOR HOSPITALS OFFERING REFERRAL CARE OR OBSTETRIC SURGERY			
27 Inventory of Surgical Supplies	Recorded Quantity	Physical Count	Last Purchase Price
adhesive tape, roll			
elastoplast, roll			
endotracheal tube sz 7 5			
jug hibitens w/ water, 10 L			
KY jelly, tube			
paper caps			
paper masks			

FOR HOSPITALS OFFERING REFERRAL CARE OR OBSTETRIC SURGERY

27	Inventory of Surgical Supplies	Recorded Quantity	Physical Count	Last Purchase Price
	partogram			
	plastic bags, leakproof lg			
	scalpel blades sz 23			
	spirits 5cc			
	suction catheter sz 10			
	sutures, chromic catgut sz 1 or 2			
	swabs, abdominal lg (1/10 roll)			
	swabs, small ratex			
	syringe and needle, 20cc			
	syringe and needle, 2cc			
	syringe and needle, 5cc			

STOCK OUTS OF TRACER DRUGS

If pharmacy stock records are routinely kept, record the number of days for which the following tracer drugs were out of stock during the previous six months. For each date on which stocks were drawn down to zero, count the number of days in each month until stocks were resupplied and write that number in the appropriate column. If there were no recorded stockouts in a month, enter 0. If no stock records were kept for a given item, leave it blank.

28	Stock Outs of Tracer Drugs	Month						
		4/97	5/97	6/97	7/97	8/97	9/97	
	amoxicillin	cap						
	benzathine penicillin	vial						
	cotrimoxazole	tablet						
	dextrose 5%	bottle						
	doxycycline	cap						
	ergometrine	amp						
	ferrous sulphate	tablet						
	lidocaine	ml						
	metronidazole	tablet						
	normal saline	bottle						
	oxytocin	amp						

DATA COLLECTOR OBSERVATIONS

Notes about record keeping at the hospital

Other observations

REPRODUCTIVE HEALTH COMMODITY STUDY

PROCEDURES FOR STUDYING PATTERNS OF CARE

Check to identify which reproductive health services are offered at the facility. For all services listed below that are offered, select a random sample of retrospective patients treated at the facility during the previous five months. In addition, select randomly from current post-natal patients still in the facility, and from current antenatal care visitors. The exact procedures for selecting cases are described below.

Identify cases from registers and medical records in the following way:

- 1 For deliveries, Caesarian sections, and cases of maternal hemorrhage or sepsis
 - a Identify sample cases using one of the suggested registers of cases (see tables below), either the maternity log, the surgical theater log, or the gynecological or medical wards logs
 - b Search for cases in chronological order, starting with the first patient on or after at May 1, 1997
 - c Search for a case with the correct condition or diagnosis of interest, and when one is found, list her information on the appropriate LISTING FORM in the space for Primary Sample Cases
 - d Search for the next case with the correct condition or diagnosis, and list her identifying information on the LISTING FORM in the space for Alternative Sample Cases
 - e After one primary and one alternative case have been found, skip to the 8th of the month (if listing deliveries in a hospital), the 15th of the month (if listing C-sections or deliveries in a health center), or the beginning of the next month (if listing hemorrhage or sepsis cases) and repeat steps b-d
 - f Continue in this way, listing one primary and one alternative case per week (deliveries in a hospital), per two weeks (C-sections or health center deliveries), or per month (hemorrhage or sepsis cases)
 - g If fewer than the target number of cases to be listed (that is 40, 20, or 10 respectively) were seen for any condition or diagnosis during the five months from May 1 to September 30, simply list all the appropriate cases that were seen during this period
 - h After listing the target number of cases, search for the medical records of the primary sample cases in the department where they are kept at this facility, and for each record found, record the relevant treatment data on the PATIENT CONTACT FORM
 - i If the medical record for a primary sample case cannot be found, substitute an alternative case, preferably the one seen in the same period as the primary case
 - j Stop recording treatment data after the target number of cases to be recorded has been reached, or when you have searched for all medical records of the listed primary and alternative cases
 - k If no medical records are kept at the facility for a given type of case, simply fill in the listing forms and make a note in the comments section of the HEALTH FACILITY SURVEY FORM
- 2 For STI cases and urinary tract infections (UTIs)
 - a Identify cases from diagnosis recorded in the outpatient treatment registers, which in the case of STIs may be a special register from the STI Programme
 - b Usually data on drugs prescribed are recorded directly in the treatment register, so it is not necessary to list cases, but only to transfer treatment data to the PATIENT CONTACT FORM
 - c Record treatment data for one patient every two weeks for STI patients in any type of health facility and for UTI patients in hospitals, and for one UTI patient per month in health centers
 - d If no data on drugs appear on the treatment register, search for data for the sample cases in prescriptions retained at the pharmacy for this period, using the patient's name, ID number, and date
 - e If neither source of data is available on outpatient treatment, skip these cases and make a note in the comments section of the HEALTH FACILITY SURVEY FORM
- 3 For current post-natal patients
 - a Make a list of names of all mothers currently staying in the health facility who have delivered a baby within the past week, including mothers with complications who may have been admitted to the general medical or surgical wards
 - b Select up to 5 mothers from this list in hospitals or maternity homes, and up to 3 mothers in health

- centers
- c If there are fewer than the target number of mothers, select all who are available, and make a note in the comments section of the HEALTH FACILITY SURVEY FORM
 - d Ask to see the ANC cards and medical records of the mothers in the sample, and record the complete history of all their antenatal visits and the records of their labor and delivery on the MATERNITY HISTORY FORM
 - e Interview briefly the mothers in the sample, explaining the purpose of the study, and gathering the data to complete the MOTHERS INTERVIEW FORM
- 4 For current ANC visitors
- a Visit the MCH clinic of the facility, or the OPD if MCH services are integrated, to identify mothers who have come for ANC services
 - b Choose at random 5 mothers who have ANC Cards or books with them, explain briefly the purpose of the study, and ask to examine their cards books
 - c Records the information from their card or book pertaining to their first ANC visit only on the PATIENT CONTACT FORM
 - d Interview the mothers in the sample, and gather the data to complete the MOTHERS INTERVIEW FORM, skipping the sections pertaining to labor and delivery
 - e The ANC sample should always be completed at a hospital, but if there are too few ANC mothers present at a health center or dispensary on the day of the survey, skip these cases and make a note in the comments section of the HEALTH FACILITY SURVEY FORM

IF THE FACILITY IS A HOSPITAL OR MATERNITY HOME OFFERING REFERRAL SERVICES			
<i>RH Problem</i>	<i>No To record</i>	<i>No</i>	<i>Where to identify patients</i>
RETROSPECTIVE SAMPLE			
Deliveries	20	40	maternity log
Caesarian section	10	20	delivery outcome cards, theater or maternity logs
Maternal hemorrhage	5	10	gynecology ward or theater logs
Maternal sepsis	5	10	gynecology or general medicine ward logs
STI (gonorrhea, syphilis, PID)	10	NA	STI program or OPD treatment logs
Urinary tract infections	10	NA	OPD treatment log
CONCURRENT SAMPLE			
Current ANC patients	5	NA	mothers waiting for ANC services
Current deliveries	up to 5	NA	current post-natal patients

IF THE FACILITY IS A HEALTH CENTER OR MATERNITY HOME WITHOUT REFERRAL SERVICES			
<i>RH Problem</i>	<i>No To record</i>	<i>No To list</i>	<i>Where to identify patients</i>
RETROSPECTIVE SAMPLE			
Deliveries	10	20	maternity log
STI (gonorrhoea, syphilis, PID)	10	NA	STI program or OPD treatment logs
Urinary tract infections	5	NA	OPD treatment log
CONCURRENT SAMPLE			
Current ANC patients	5	NA	mothers waiting for ANC services
Current deliveries	up to 3	NA	current maternity patients

PATIENT CONTACT FORM

District		Health Facility		Data Collector		Date	
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Type*	Patient ID	Visit Date	Age	Prescriber*
	Describe Conditions/Health Problems			Code
	Drug Name/Strength or Lab Test		Dose/Quantity	Code
Drugs or Lab Tests				
Comments (e g , outcomes or complications)				

Type*	Patient ID	Visit Date	Age	Prescriber
	Describe Conditions/Health Problems			Code
	Drug Name/Strength or Lab Test		Dose/Quantity	Code
Drugs or Lab Tests				
Comments (e g , outcomes or complications)				

* Type 1=delivery, 2=Cesarian section, 3=hemorrhage, 4=sepsis, 5=STI, 6=UTI, 7=current ANC

Prescriber 1=doctor, 2=clinical officer, 3=nurse 4=midwife, 5=other

REPRODUCTIVE HEALTH COMMODITIES STUDY

HEALTH CARE PROVIDER QUESTIONNAIRE

District		Health Facility	
Facility Type (PH=provincial hospital, DH=district hospital OH=Other hospital, MH=maternity or nursing home, HC=health center DI=dispensary)			
Facility Administration (G=government, M=mission, N=Other NGO, P=owned by company or private individual)			
Date		Data collector	

Find out from the medical officer in charge the names of all staff currently present at this health facility who are routinely involved in prenatal care, delivery, treatment of post-natal complications, or treatment of STDs From this list, randomly select the following clinicians to be interviewed

<u>Type</u>	<u>Number</u>
OB/Gyn or other physician (if present)	1
clinical officer (if present)	1
nurse-midwife, nurse, or midwife	2

Locate the clinician and conduct the interview in a private location

RESPONDENT BACKGROUND

After introducing the purpose of the study to the respondent, confirm that he/she is currently involved in treating women during pregnancy, delivery, or with STDs Explain that you would like to ask some general questions about his/her background, training, and current duties

1 Respondent gender	<i>Check one</i>	<input type="checkbox"/> 1 Male	<input type="checkbox"/> 2 Female
2 What is your highest level of qualification?	<i>Check one category</i>	<input checked="" type="checkbox"/>	
OB/Gyn Specialist		<input type="checkbox"/> 1	
GP or other medical specialty		<input type="checkbox"/> 2	
Clinical Officer		<input type="checkbox"/> 3	
Nurse WITH midwifery training		<input type="checkbox"/> 4	
Nurse WITHOUT midwifery training		<input type="checkbox"/> 5	
Midwife		<input type="checkbox"/> 6	
3 When did you graduate from your highest qualification? <i>Enter year graduated from highest training</i>			

SERVICE PROVISION AND PRACTICE

4 Do you currently provide the following services? <i>Read and ask about each service separately</i>	check box <input checked="" type="checkbox"/>	
Antenatal care	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
Treatment of STDs	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
Normal delivery	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
Breech delivery	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
Caesarian section	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
Management of abortion complications/incomplete delivery	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No

5 When was the last time you saw a woman for her first antenatal visit ?	Check one category <input checked="" type="checkbox"/>
Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 7
Never	<input type="checkbox"/> 4 skip to Q 7

6 What medicines (including immunizations) or tests did you order or give to her? <i>Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"</i>			
<i>Medicine / Immunization</i>	<i>check</i> <input checked="" type="checkbox"/> <i>if mentioned</i>	<i>Test</i>	<i>check</i> <input checked="" type="checkbox"/> <i>if mentioned</i>
chloroquine	<input type="checkbox"/>	blood grouping	<input type="checkbox"/>
ferrous sulfate	<input type="checkbox"/>	hemoglobin	<input type="checkbox"/>
folic acid	<input type="checkbox"/>	malaria smear	<input type="checkbox"/>
quinine	<input type="checkbox"/>	stool for ova and parasites	<input type="checkbox"/>
tetanus toxoid	<input type="checkbox"/>	urine analysis for glucose & protein	<input type="checkbox"/>
other (<i>specify</i>)	<input type="checkbox"/>	other (<i>specify</i>)	<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

7 When was the last time you provided care to a woman with moderate preeclampsia?	Check one category <input checked="" type="checkbox"/>
Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 9
Never	<input type="checkbox"/> 4 skip to Q 9

8 What medicines or tests did you order or give to her? <i>Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"</i>			
<i>Medicine</i>	<i>check <input checked="" type="checkbox"/> if mentioned</i>	<i>Test</i>	<i>check <input checked="" type="checkbox"/> if mentioned</i>
diazepam	<input type="checkbox"/>	urine for protein	<input type="checkbox"/>
hydralazine	<input type="checkbox"/>	other (<i>specify</i>)	<input type="checkbox"/>
methyldopa	<input type="checkbox"/>		<input type="checkbox"/>
paracetamol	<input type="checkbox"/>		<input type="checkbox"/>
phenobarbitone	<input type="checkbox"/>		<input type="checkbox"/>
propranolol	<input type="checkbox"/>		<input type="checkbox"/>
other (<i>specify</i>)	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

9 When was the last time you cared for a women whose labor was not progressing but who did NOT require a Caesarian section?	<i>Check one category <input checked="" type="checkbox"/></i>
Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 13
Never	<input type="checkbox"/> 4 skip to Q 13

10 What medicines or tests did you order or give to her before or during her delivery? <i>Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"</i>			
<i>Medicine</i>	<i>check <input checked="" type="checkbox"/> if mentioned</i>	<i>Test</i>	<i>check <input checked="" type="checkbox"/> if mentioned</i>
dextrose 5%	<input type="checkbox"/>	other (<i>specify</i>)	<input type="checkbox"/>
diazepam	<input type="checkbox"/>		<input type="checkbox"/>
ergometrine	<input type="checkbox"/>		<input type="checkbox"/>
oxytocin	<input type="checkbox"/>		<input type="checkbox"/>
paracetamol	<input type="checkbox"/>		<input type="checkbox"/>
other (<i>specify</i>)	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

11 When was the last time that you attended a normal delivery?	<i>Check one category <input checked="" type="checkbox"/></i>
Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 11

Never	<input type="checkbox"/> 4 skip to Q 11
-------	---

12 What medicines or tests did you order or give to her?
Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"

Medicine	check <input checked="" type="checkbox"/> if mentioned	Test	check <input checked="" type="checkbox"/> if mentioned
diazepam	<input type="checkbox"/>	other (specify)	<input type="checkbox"/>
ergometrine	<input type="checkbox"/>		<input type="checkbox"/>
paracetamol	<input type="checkbox"/>		<input type="checkbox"/>
vitamin K	<input type="checkbox"/>		<input type="checkbox"/>
other (specify)	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

13 When was the last time you treated a woman who was hemorrhaging before, during or after childbirth?

	Check one category <input checked="" type="checkbox"/>
Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 17
Never	<input type="checkbox"/> 4 skip to Q 17

14 What medicines (including blood and IV fluids) or tests did you order or give to her?
Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"

Name of Medicine / Blood IV fluid	check <input checked="" type="checkbox"/> if mentioned	Test	check <input checked="" type="checkbox"/> if mentioned
ergometrine	<input type="checkbox"/>	other (specify)	<input type="checkbox"/>
oxytocin	<input type="checkbox"/>		<input type="checkbox"/>
blood transfusion	<input type="checkbox"/>		<input type="checkbox"/>
iv fluid (specify)	<input type="checkbox"/>		<input type="checkbox"/>
other (specify)	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

15 When was the last time you performed a Caesarian section?

	Check one category <input checked="" type="checkbox"/>
Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 15
Never	<input type="checkbox"/> 4 skip to Q 15

16 What medicines (including IV fluids, anesthesia, and analgesics) or tests did you order or give during the Caesarian section?

Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"

<i>Medicine</i>	<i>check <input checked="" type="checkbox"/> if mentioned</i>	<i>Test</i>	<i>check <input checked="" type="checkbox"/> if mentioned</i>
atropine	<input type="checkbox"/>	other (<i>specify</i>)	<input type="checkbox"/>
dextrose 5%	<input type="checkbox"/>		<input type="checkbox"/>
neostigmine	<input type="checkbox"/>		<input type="checkbox"/>
normal saline	<input type="checkbox"/>		<input type="checkbox"/>
oxytocin	<input type="checkbox"/>		<input type="checkbox"/>
paracetamol	<input type="checkbox"/>		<input type="checkbox"/>
pethidine	<input type="checkbox"/>		<input type="checkbox"/>
prochlorperazine	<input type="checkbox"/>		<input type="checkbox"/>
sterile water	<input type="checkbox"/>		<input type="checkbox"/>
suxamethonium	<input type="checkbox"/>		<input type="checkbox"/>
thiopentone sodium	<input type="checkbox"/>		<input type="checkbox"/>
other (<i>specify</i>)	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

17 When was the last time you treated a women with postpartum sepsis?

Check one category

Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 19
Never	<input type="checkbox"/> 4 skip to Q 19

18 What medicines (including IV fluids) or tests did you order or give to her?

Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"

<i>Medicine</i>	<i>check <input checked="" type="checkbox"/> if mentioned</i>	<i>Test</i>	<i>check <input checked="" type="checkbox"/> if mentioned</i>
amoxicillin	<input type="checkbox"/>	other (<i>specify</i>)	<input type="checkbox"/>
ampicillin	<input type="checkbox"/>		<input type="checkbox"/>
dextrose 5%	<input type="checkbox"/>		<input type="checkbox"/>
gentamycin	<input type="checkbox"/>		<input type="checkbox"/>
metronidazole	<input type="checkbox"/>		<input type="checkbox"/>
paracetamol	<input type="checkbox"/>		<input type="checkbox"/>
other (<i>specify</i>)	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

19 When was the last time you treated a woman with urinary tract infection?	Check one category <input checked="" type="checkbox"/>
Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 21
Never	<input type="checkbox"/> 4 skip to Q 21

20 What medicines or tests did you order or give to her? <i>Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"</i>			
Medicine	check <input checked="" type="checkbox"/> if mentioned	Test	check <input checked="" type="checkbox"/> if mentioned
ampicillin	<input type="checkbox"/>	other (specify)	<input type="checkbox"/>
amoxicillin	<input type="checkbox"/>		<input type="checkbox"/>
cotrimoxazole	<input type="checkbox"/>		<input type="checkbox"/>
erythromycin	<input type="checkbox"/>		<input type="checkbox"/>
metronidazole	<input type="checkbox"/>		<input type="checkbox"/>
nitrofurantoin	<input type="checkbox"/>		<input type="checkbox"/>
other (specify)	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

21 When was the last time you treated a woman with genital ulcers?	Check one category <input checked="" type="checkbox"/>
Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 23
Never	<input type="checkbox"/> 4 skip to Q 23

22 What medicines or tests did you order or give to her? <i>Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"</i>			
Medicine	check <input checked="" type="checkbox"/> if mentioned	Test	check <input checked="" type="checkbox"/> if mentioned
amoxicillin	<input type="checkbox"/>		<input type="checkbox"/>
benzathine penicillin	<input type="checkbox"/>	other (specify)	<input type="checkbox"/>
ciprofloxacin	<input type="checkbox"/>		<input type="checkbox"/>
doxycycline	<input type="checkbox"/>		<input type="checkbox"/>
erythromycin	<input type="checkbox"/>		<input type="checkbox"/>
norfloxacin	<input type="checkbox"/>		<input type="checkbox"/>
other (specify)	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

23 When was the last time you treated a woman with a vaginal discharge?	Check one category <input checked="" type="checkbox"/>
Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 25
Never	<input type="checkbox"/> 4 skip to Q 25

24 What medicines or tests did you order or give to her? <i>Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"</i>			
Medicine	check <input checked="" type="checkbox"/> if mentioned	Test	check <input checked="" type="checkbox"/> if mentioned
amoxicillin	<input type="checkbox"/>	other (specify)	<input type="checkbox"/>
augmentin	<input type="checkbox"/>		<input type="checkbox"/>
doxycycline	<input type="checkbox"/>		<input type="checkbox"/>
erythromycin	<input type="checkbox"/>		<input type="checkbox"/>
norfloxacin	<input type="checkbox"/>		<input type="checkbox"/>
probenecid	<input type="checkbox"/>		<input type="checkbox"/>
other (specify)	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

25 When was the last time that you treated a woman with vaginal discharge and lower abdominal pain?	Check one category <input checked="" type="checkbox"/>
Within the last week	<input type="checkbox"/> 1
Within the last six months	<input type="checkbox"/> 2
More than six months ago	<input type="checkbox"/> 3 skip to Q 27
Never	<input type="checkbox"/> 4 skip to Q 27

26 What medicines and/or tests did you order or give to her? <i>Elicit spontaneous response DO NOT READ OUT LIST Probe for multiple responses by asking "Anything else?"</i>			
Medicine	check <input checked="" type="checkbox"/> if mentioned	Test	check <input checked="" type="checkbox"/> if mentioned
amoxicillin	<input type="checkbox"/>	other (specify)	<input type="checkbox"/>
doxycycline	<input type="checkbox"/>		<input type="checkbox"/>
erythromycin	<input type="checkbox"/>		<input type="checkbox"/>
metronidazole	<input type="checkbox"/>		<input type="checkbox"/>
norfloxacin	<input type="checkbox"/>		<input type="checkbox"/>
other (specify)	<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

This is the end of the interview Thank the participant for his/her time

REPRODUCTIVE HEALTH COMMODITIES STUDY

MOTHERS INTERVIEW FORM

District		Health Facility	
Date of Interview		Data Collector	

This form should be used for interviewing (1) women who just gave birth and are still in their post-natal stay, or (2) pregnant mothers attending MCH clinic After introducing yourself and the survey, explain that you would like to ask about her experience during pregnancy (and birth, if she has already delivered)

1 Type of Respondent (check one)	a Antenatal clinic attender	<input type="checkbox"/>
	b Post-natal mother	<input type="checkbox"/>

ANTENATAL CARE

2 How many months pregnant were you when you first visited a health facility for antenatal care during this pregnancy? <i>Enter number of months If no antenatal visits enter 0</i>	<i>If no ANC visit, skip to Q 6</i>	
3 What kind of health facility did you attend for your first antenatal visit? <i>Read list and check one</i>	<i>check one type</i> <input checked="" type="checkbox"/>	
a government hospital	<input type="checkbox"/>	1
b mission hospital	<input type="checkbox"/>	2
c government health center	<input type="checkbox"/>	3
d government dispensary	<input type="checkbox"/>	4
f other (<i>specify</i>)	<input type="checkbox"/>	5
4 Did they do any of the following during your first antenatal visit? <i>Read each item and record response leave item blank if mother does not know</i>	<i>check box</i> <input checked="" type="checkbox"/>	
a take a blood sample from you or prick your thumb for tests?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
b take urine from you for tests?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
c take stool from you for tests?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
5 Did you receive any drugs or injections during your first antenatal visit?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No <i>skip to Q 6</i>

6	Which drugs were they? <i>Elicit spontaneous response DO NOT READ LIST probe by asking "Anything else?"</i>	check boxes <input checked="" type="checkbox"/>
	drug for anemia (iron folate, ferrous sulfate, folic acid)	<input type="checkbox"/>
	vitamin	<input type="checkbox"/>
	tetanus immunization	<input type="checkbox"/>
	malaria medication	<input type="checkbox"/>
	others (specify)	<input type="checkbox"/>

7	Overall, please tell me all the drugs that you are taking (or have taken) during your pregnancy, including those suggested by health workers and those you got for yourself <i>Elicit spontaneous response DO NOT READ LIST probe by asking "Anything else?"</i>	check box(es) <input checked="" type="checkbox"/>
	drug for anemia (iron folate, ferrous sulfate, folic acid)	<input type="checkbox"/>
	vitamin	<input type="checkbox"/>
	tetanus immunization	<input type="checkbox"/>
	malaria medication	<input type="checkbox"/>
	others (specify)	<input type="checkbox"/>

If the respondent is a mother attending an antenatal clinic, skip to the end of the interview

COMMODITIES AND COST FOR DELIVERY

8	Were you asked to bring any of the following drugs or supplies to this facility for your delivery? <i>Read list check box and enter number and cost of each item</i>	check box <input checked="" type="checkbox"/>		<i>If yes, enter no and cost</i>	
				Number	Cost
	gloves	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No		
	sutures	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No		
	drugs (specify)	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No		
	mackintosh	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No		
	other (specify)	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No		
9	In total, how much did you spend to buy items that you needed for your delivery? <i>Enter the amount If not known or if no items were purchased enter 0</i>				
10	Finally, I would like to know a few things about your labor and delivery	check box <input checked="" type="checkbox"/>			
	a Did you have surgery for your delivery?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No		
	b Did you receive any IV drugs while you were in the labor room?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No		
	c Did you receive a blood transfusion?	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No		

This is the end of the interview Thank the respondent for her time and ask if she has any questions

REPRODUCTIVE HEALTH COMMODITIES STUDY

PHARMACY SURVEY FORM

District		Pharmacy	
Date		Data collector	

Introduce yourself to the person in charge of the pharmacy and explain the purpose of the study. Ask if it would be possible to ask a few short questions about care during pregnancy to (1) the pharmacist and (2) one of the counter staff who regularly wait on customers. Conduct both interviews separately.

1 Type of Respondent (check one)	a pharmacist	<input type="checkbox"/>
	b other pharmacy employee	<input type="checkbox"/>

PRACTICES AND RECOMMENDATIONS

2 On average, about how many pregnant women visit this pharmacy each week? <i>Enter number if not known enter 0</i>		
3 Are there drugs (ethical or OTC) that you <u>recommend</u> for pregnant women? <i>If yes ask to see the drugs and record the following information</i>	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
Trade Name, Strength	Amount usually sold to one customer	Price to the customer
a		
b		
c		
d		
e		
4 Are there drugs (ethical or OTC) that you <u>recommend against</u> for pregnant women? <i>If yes ask to see the drugs and record the following information</i>	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
Trade Name, Strength	Amount usually sold to one customer	Price to customer
a		
b		
c		
d		
e		

5	Is there any other information that you give to pregnant customers? What? <i>Elicit spontaneous response probe for multiple responses do not read the list</i>	check box <input checked="" type="checkbox"/>	
a	Visit an antenatal care clinic	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
b	Take iron folate	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
c	Dietary advice (specify)	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
d	Other (specify)	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No

6	If you have a female customer who has had vaginal discharge for the last two weeks, what would you recommend to her? <i>Elicit spontaneous response probe for multiple responses do not read the list</i>	check box <input checked="" type="checkbox"/>	
	Visit a doctor	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
	Get tested for STI	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
	Take drugs (specify)	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
	Other (specify)	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No

7	If you recommend drugs, could you please show me the ones you recommend? <i>Record the following information</i>		
	Trade Name, Strength	Amount usually sold to one customer	Price to customer
	a		
	b		
	c		
	d		
	e		

MEDICAL SUPPLIES FOR DELIVERY

8	If a pregnant customer or her family member comes to your shop to buy medical supplies for her delivery at a health facility, what items does she usually buy?		
	Item	Number of Units	Unit Price
	a		
	b		
	c		
	d		
	e		

If this is the second interview conducted in this pharmacy and you have already completed the inventory of commodities, skip to the end of the interview

INVENTORY OF COMMODITIES

Check if this pharmacy has the following drugs in stock. The drugs are listed by generic names, but consider all brand name products containing the same ingredient to be equivalent. If one or more equivalent products are in stock, ask the respondent which is the most popular. Record the trade name, strength, pack size, and price of the most popular brand for each item.

Tracer Drugs		Check if in stock	Information on most popular brand		
			Trade Name, Strength	Usual amount sold to one customer	Price to the customer
amoxicillin	cap	<input type="checkbox"/>			
benzathine penicillin	vial	<input type="checkbox"/>			
cotrimoxazole	tablet	<input type="checkbox"/>			
dextrose 5%	bottle	<input type="checkbox"/>			
doxycycline	cap	<input type="checkbox"/>			
ergometrine	amp	<input type="checkbox"/>			
ferrous sulphate	tablet	<input type="checkbox"/>			
lidocaine	ml	<input type="checkbox"/>			
metronidazole	tablet	<input type="checkbox"/>			
normal saline	bottle	<input type="checkbox"/>			
oxytocin	amp	<input type="checkbox"/>			

Tracer Supplies	Check if in stock	Information on the most popular brand		
		Trade name	Usual amount sold to one customer	Price to the customer
gauze, absorbent	<input type="checkbox"/>			
gloves, sterile (pair)	<input type="checkbox"/>			
sheet, plastic (Macintosh)	<input type="checkbox"/>			
sutures, chromic or catgut	<input type="checkbox"/>			

This is the end of the interview. Thank the respondent for his/her time and ask if there are any questions.

Simulated Purchase Survey for Antenatal Care Consultations at Pharmacies

Scenario

The surveyor will enter the pharmacy and tell the counter attendant that she thinks she is pregnant. She has been feeling sick in the morning, and sometimes vomits. She also feels weak and dizzy. The surveyor will then ask the counter attendant who assists her for advice on what products are best to treat this condition.

No other information will be given at this point, unless asked for by the shop attendant.

At some point before the end of the interview, ask the counter attendant if she/he is a pharmacist.

In response to the counter attendant's questions, the surveyor will provide the following information:

General Condition

- ▶ The surveyor has been having this problem for the last few weeks
- ▶ Her last period was 4 months ago
- ▶ She does not have joint pain or fever
- ▶ She does not have any previous children

Antenatal Care

- ▶ She has not visited any doctor to be tested for pregnancy because she is usually very busy during the day
- ▶ She does not have a regular doctor
- ▶ She is not taking any medication or special food

Purchase of Drugs

- ▶ At first, the surveyor should not mention how much she is willing to spend on drugs to treat her condition
- ▶ If the total cost of products that the pharmacy attendant recommends exceeds KSh 300, she should mention that she has only a little money to spend on drugs
- ▶ If the counter attendant recommends an antibiotic for more than one week, the surveyor should tell the pharmacy attendant that she would like to try it for one week first

Actions

The surveyor will remember:

- ▶ Any questions that the shop attendant asks before making a recommendation,
- ▶ Any advice about the products recommended,
- ▶ Any advice about products that she should avoid,
- ▶ Any other advice about how to deal with the condition she presented

Purchase all products recommended in the quantities offered, if they are within the amount which the surveyor told the pharmacy attendant she can spend. (Keep all receipts.) Remember names and prices of products that the surveyor does not purchase, but which were recommended by the shop attendant.

All information should be recorded on the information sheets by the surveyor as soon as possible after leaving the store.

REPRODUCTIVE HEALTH COMMODITIES STUDY

PHARMACY SIMULATED PURCHASE SURVEY FORM

Province		District		Name of Pharmacy	
Date		Data collector			

Complete this form based on your memory of the interaction with the shop attendant after leaving the store

ANTENATAL CARE

1	Person who waited on simulated customer	<i>check box</i> <input checked="" type="checkbox"/>
		<input type="checkbox"/> 1 Pharmacist
		<input type="checkbox"/> 2 Other

2	Which of the following questions did the counter attendant ask you before making a treatment recommendation?	<i>check box</i> <input checked="" type="checkbox"/>
	a Pregnancy tested?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 0 No
	b Visited antenatal care or OB/GYN doctor?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 0 No
	c When was the last period?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 0 No
	d Have lack of sleep or rest?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 0 No
	e Have joint pain?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 0 No
	f Have fever?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 0 No
	g Lost appetite?	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 0 No
	h Other (specify)	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 0 No
		<input type="checkbox"/> 1 Yes <input type="checkbox"/> 0 No

3 Record the following information about all drugs recommended, including those which you did not purchase because of the price Check the products that you purchased				
<i>Brand Name</i>	<i>Reason Recommended</i>	<i>Number Suggested</i>	<i>Price</i>	<i>Check if Purchased</i>
a				
b				
c				
d				
e				
f				
g				
h				

4 When you mentioned that you had limited budget, what advice did the attendant give you?	<i>check box</i> <input checked="" type="checkbox"/>	
a To substitute less expensive generic products	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
b To purchase fewer products	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
c To purchase less of the products recommended	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
c To purchase all drugs, and pay later	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
d Other (specify)	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No

5 What other advice did the pharmacy attendant give you?	<i>check box</i> <input checked="" type="checkbox"/>	
a To visit an antenatal care clinic	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
b Recommended a doctor or midwife	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
c Diet or food supplement	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
d To have blood pressure checked	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
e To avoid certain drugs	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
f Other (specify)	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No
	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 0 No

ANNEX THREE SAMPLING FRAME

Provinces selected by MOH Nairobi, Central, Western, Nyanza

Strata and Sample Selection		
Capital	Nairobi	
High probability of good service (having a provincial hospital)	Nyeri Kisumu Kakamega	random # 0 1805
Low probability of good service (relatively remote or poor)	Kirinyaga Nyandarua Homa Bay Kuria Busia	random # 0 3982
Medium probability of good service	Kiambu Muranga	Nyeri districts eliminated since two already selected
	Kisii Siaya Nyamira Migori	Nyanza random # 0 7164
	Bungoma Vihiga	Western random # 0 2732

**ANNEX FOUR FACILITIES WITH REPRODUCTIVE HEALTH COMMODITIES
AVAILABLE**

Annex 4

Facilities with RH Commodities Available

Type of commodity	All Facilities		Hospitals						Health Centers						Mat Home		Dispensary					
	%		Gov	%	Mis	%	Pri	%	Total	%	Gov	%	Mis	%	Pri	%	Total	%		%		
Drugs for all facilities																						
amoxicillin	13/56	23%	5/6	83%	2/6	33%	2/3	67%	9/15	60%	2/24	8%	1/3	33%	0/2	0%	3/29	10%	0/3	0%	1/9	11%
benzathine pen	42/56	75%	5/6	83%	6/6	100%	3/3	100%	14/15	93%	21/24	88%	2/3	67%	1/2	50%	24/29	83%	0/3	0%	4/9	44%
doxycycline	42/56	75%	5/6	83%	5/6	83%	2/3	67%	12/15	80%	20/24	83%	2/3	67%	0/2	0%	22/29	76%	1/3	33%	7/9	78%
ferrous sulfate	48/56	86%	5/6	83%	5/6	83%	1/3	33%	11/15	73%	22/24	92%	3/3	100%	2/2	100%	27/29	93%	1/3	33%	9/9	100%
metronidazole	45/56	80%	4/6	67%	6/6	100%	2/3	67%	12/15	80%	19/24	79%	3/3	100%	2/2	100%	24/29	83%	2/3	67%	7/9	78%
<i>mean percent</i>		68%		80%		80%		67%		77%		70%		73%		50%		69%		27%		62%
Drugs for facilities performing ni deliveries																						
cotrimoxazole	38/47	68%	5/6	83%	6/6	100%	3/3	100%	14/15	93%	15/24	63%	3/3	100%	2/2	100%	20/29	69%	2/3	67%		
ergometrine	36/47	64%	2/6	33%	5/6	83%	3/3	100%	10/15	67%	17/24	71%	3/3	100%	2/2	100%	22/29	76%	3/3	100%		
lidocaine	33/47	59%	4/6	67%	6/6	100%	2/3	67%	12/15	80%	13/24	54%	3/3	100%	2/2	100%	18/29	62%	3/3	100%		
normal saline	22/47	39%	3/6	50%	6/6	100%	2/3	67%	11/15	73%	5/24	21%	2/3	67%	1/2	50%	8/29	28%	3/3	100%		
oxytocin	17/47	30%	5/6	83%	5/6	83%	3/3	100%	13/15	87%	0/24	0%	0/3	0%	2/2	100%	2/29	7%	2/3	67%		
<i>mean percent</i>		52%		63%		93%		87%		80%		42%		73%		90%		48%		87%		
Drugs for hosp offering OB surgery																						
atropine	13/15	87%	5/6	83%	6/6	100%	2/3	67%	13/15	87%												
crystalline pen	15/15	100%	6/6	100%	6/6	100%	3/3	100%	15/15	100%												
dextrose 5 /	13/15	87%	3/6	50%	6/6	100%	3/3	100%	12/15	80%												
hydralazine	14/15	93%	5/6	83%	6/6	100%	3/3	100%	14/15	93%												
peithidine	8/15	53%	4/6	67%	4/6	67%	0/3	0%	8/15	53%												
suxamethonium	13/15	87%	6/6	100%	5/6	83%	2/3	67%	13/15	87%												
thiopentone	13/15	87%	6/6	100%	5/6	83%	2/3	67%	13/15	87%												
<i>mean percent</i>		85%		83%		90%		71%		84%												
Supplies for all facilities																						
glass slide	35/56	63%	5/6	83%	6/6	100%	2/3	67%	13/15	87%	17/24	71%	2/3	67%	2/2	100%	21/29	72%	1/3	33%	0/9	0%
syringe and needle	44/56	79%	4/6	67%	5/6	83%	2/3	67%	11/15	73%	19/24	79%	3/3	100%	2/2	100%	24/29	83%	3/3	100%	6/9	67%
urine dipsticks	30/56	54%	4/6	67%	6/6	100%	2/3	67%	12/15	80%	12/24	50%	2/3	67%	2/2	100%	16/29	55%	1/3	33%	1/9	11%
VDRL kits	25/56	45%	5/6	83%	6/6	100%	2/3	67%	13/15	87%	9/24	38%	1/3	33%	1/2	50%	11/29	38%	1/3	33%	0/9	0%
<i>mean percent</i>		60%		75%		96%		67%		82%		59%		67%		88%		62%		50%		19%
Supplies for facilities doing normal deliveries																						
branula	17/47	36%	5/6	83%	6/6	100%	2/3	67%	13/15	87%	1/24	4%	0/3	0%	2/2	100%	3/29	10%	1/3	33%		
cord clamps	12/47	26%	2/6	33%	3/6	50%	3/3	100%	8/15	53%	1/24	4%	1/3	33%	2/2	100%	4/29	14%	0/3	0%		
gauze absorbent	32/47	68%	6/6	100%	6/6	100%	3/3	100%	15/15	100%	13/24	54%	3/3	100%	0/2	0%	16/29	55%	1/3	33%		
non sterile gloves	25/47	53%	3/6	50%	4/6	67%	1/3	33%	8/15	53%	11/24	46%	3/3	100%	2/2	100%	16/29	55%	1/3	33%		
sterile gloves	38/47	81%	5/6	83%	6/6	100%	3/3	100%	14/15	93%	17/24	71%	2/3	67%	2/2	100%	21/29	72%	3/3	100%		
IV set	23/47	49%	4/6	67%	6/6	100%	2/3	67%	12/15	80%	6/24	25%	1/3	33%	1/2	50%	21/29	72%	3/3	100%		
Jik (1 liter)	23/47	49%	5/6	83%	1/6	17%	1/3	33%	7/15	47%	15/24	63%	1/3	33%	0/2	0%	16/29	55%	0/3	0%		
sutures	36/47	77%	5/6	83%	5/6	83%	3/3	100%	13/15	87%	16/24	67%	2/3	67%	2/2	100%	20/29	69%	3/3	100%		
<i>mean percent</i>		55%		73%		77%		75%		75%		42%		54%		69%		50%		50%		
Supplies for hosp offering OB surgery																						
scalpel blades	13/15	87%	5/6	83%	5/6	83%	3/3	100%	13/15	87%												
suction catheter	7/15	47%	2/6	33%	4/6	67%	1/3	33%	7/15	47%												
syringe and needle 5cc	10/15	67%	1/6	17%	6/6	100%	3/3	100%	10/15	67%												
<i>mean percent</i>		67%		44%		83%		78%		67%												
Total mean percent		64%		56%		87%		74%		77%		53%		67%		74%		57%		53%		27%

ANNEX FIVE COMPLIANCE WITH KENYA STGS

Annex 5

Self-Reported Practice Patterns and Compliance with Kenya STGs

(1) Category of health care providers are

OB/GYN	Obstetric Gynecology specialist
GP	General Practitioner or other medical specialty
CO	Clinical Officer
NMW	Nurse with midwifery training
NMN	Nurse without midwifery training
MW	midwife

(2) Drugs or tests with "*" and "*" are included in the Kenya STGs "*" indicates drugs recommended for second line treatment

ANC	Type of Provider					
	OB/GYN (n=6)	GP (n=6)	CO (n=14)	NMW (n=77)	NMN (n=4)	MW (n=3)
iron*	3	1	7 (50%)	57 (74%)	3	3
folic acid*	3	1	6 (43%)	50 (65%)	2	2
tetanus toxoid*	3	3	8 (57%)	41 (55%)	2	3
hemoglobin*	6	5	6 (43%)	50 (68%)	2	2
urine test*	4	5	7 (50%)	36 (49%)	1	0
stool test	0	0	1 (7%)	4 (5%)	0	0

Preeclampsia	Type of Provider					
	OB/GYN (n=5)	GP (n=8)	CO (n=10)	NMW (n=33)	NMN (n=1)	MW (n=4)
methyl dopa*	5	5	4 (40%)	18 (55%)	0	0
phenobarbitone*	4	4	3 (30%)	17 (52%)	1	2
diazepam	1	4	4 (40%)	10 (30%)	0	0
hydralazine	4	5	2 (20%)	6 (18%)	0	0
propranolol	0	0	1 (10%)	1 (3%)	0	0
paracetamol	0	0	0	3 (9%)	0	0
urine protein*	2	6	7 (70%)	22 (67%)	1	2

Obstructed Labor	Type of Provider				
	OB/GYN (n=5)	GP (n=6)	CO (n=5)	NMW (n=38)	MW (n=3)
oxytocin*	4	4	1	7 (18%)	1
dextrose*	4	4	5	16 (38%)	2
diazepam	1	0	0	0	0
ergometrine	3	1	3	12 (38%)	1
paracetamol	0	0	0	2 (5%)	0

Normal Delivery	Type of Provider					
	OB/GYN (n=6)	GP (n=4)	CO (n=6)	NMW (n=53)	NMN (n=2)	MW (n=3)
ergometrine*	6	4	6	50 (94%)	2	3
paracetamol*	0	0	0	3 (11%)	0	0
diazepam	1	0	0	0	0	0
vitamin K	1	0	0	0	0	0

Hemorrhage	Type of Provider				
	OB/GYN (n=5)	GP (n=7)	CO (n=12)	NMW (n=34)	MW (n=2)
oxytocin*	2	1	0	1 (3%)	0
IV fluid*	5	4	2 (17%)	13 (38%)	2
ergometrine	3	3	5 (42%)	22 (65%)	2
blood	4	0	1 (8%)	4 (12%)	0

Cesarian Section	Type of Provider	
	OB/GYN (n=5)	GP (n=8)
atropine*	3	7
pethidine*	3	3
suxamethonium*	3	2
thiopentone*	2	3
neostigmine*	1	3
oxytocin*	2	1
prochlorperazine*	1	0
paracetamol*	1	2
sterile water*	0	0
dextrose 5%*	4	3
normal saline*	3	3

Maternal Sepsis	Type of Provider			
	OB/GYN (n=5)	GP (n=8)	CO (n=17)	NMW (n=42)
amoxicillin*	1	2	3 (18%)	17 (40%)
ampicillin**	2	2	5 (29%)	6 (14%)
dextrose 5%**	1	1	0	3 (7%)
gentamicin**	2	6	4 (24%)	9 (21%)
metronidazole*,**	2	8	15 (88%)	20 (48%)
paracetamol*	3	2	3 (18%)	19 (45%)

UTI	Type of Provider					
	OB/GYN (n=5)	GP (n=8)	CO (n=20)	NMW (n=73)	NMN (n=4)	MW (n=4)
amoxicillin*	0	3	8 (40%)	14 (19%)	0	2
cotrimoxazole*	0	1	0	8 (11%)	1	0
erythromycin**	0	1	1 (5%)	8 (11%)	1	0
ampicillin	1	0	1 (5%)	9 (12%)	0	0
metronidazole	0	3	3 (15%)	26 (36%)	0	0
nitrofurantoin	4	2	3 (15%)	12 (16%)	1	0
norfloxacin	0	3	5 (25%)	7 (10%)	0	0
urine test	2	0	5 (25%)	10 (14%)	0	1

GUD	Type of Provider			
	OB/GYN (n=5)	GP (n=3)	CO (n=14)	NMW (n=29)
erythromycin*	1	2	9 (64%)	16 (55%)
benzathine penicillin*	2	3	9 (64%)	15 (52%)
ciprofloxacin**	0	0	0	1 (3%)
doxycycline	1	0	2 (14%)	2 (7%)
amoxicillin	1	0	1 (7%)	1 (3%)
norfloxacin	1	0	0	2 (7%)

Gonorrhea (vaginal discharge)	Type of Provider					
	OB/GYN (n=5)	GP (n=7)	CO (n=21)	NMW (n=72)	NMN (n=3)	MW (n=4)
doxycycline*	1	1	8 (38%)	15 (21%)	1	1
norfloxacin*	0	1	8 (38%)	12 (17%)	0	0
amoxicillin**	1	0	2 (10%)	12 (17%)	0	1
augmentin**	1	0	0	2 (3%)	0	0
erythromycin**	1	0	0	6 (8%)	0	0
probenecid**	1	0	1 (5%)	2 (3%)	0	0
clotrimazole	2	0	5 (24%)	17 (24%)	1	0
metronidazole	2	2	7 (33%)	21 (29%)	1	1
nystatin	1	4	6 (29%)	13 (18%)	2	1

PID	Type of Provider					
	OB/GYN (n=5)	GP (n=5)	CO (n=21)	NMW (n=54)	NMN (n=2)	MW (n=3)
doxycycline*	2	1	13 (62%)	16 (30%)	2	0
metronidazole*	3	4	18 (86%)	31 (57%)	1	1
norfloxacin*	1	1	12 (57%)	13 (24%)	1	0
metronidazole*	3	4	18 (86%)	31 (57%)	1	1
erythromycin**	0	1	5 (24%)	5 (9%)	0	0
amoxicillin	2	1	2 (10%)	13 (24%)	1	0
probenecid	1	0	1 (5%)	2 (4%)	0	0

ANNEX SIX SAMPLES OF ACTUAL EPISODIC COST ESTIMATES

Syphilis

SOURCE KENYA NASCOP

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
first line	1	benzathine penicillin G	IM	2.4	MU	vial	1	1	2.4 MU	1	90.0%	\$0.510	\$0.510	\$0.459
	1	erythromycin	PO	500	mg	tablet	3	7	250 mg	2	90.0%	\$0.049	\$2.054	\$1.849
second line	3	ciprofloxacin	PO	500	mg	tablet	1	1	500 mg	1	10.0%	\$0.545	\$0.545	\$0.055
penicillin allergy	1	erythromycin	PO	500	mg	tablet	4	14	250 mg	2	10.0%	\$0.049	\$5.478	\$0.548
Average Cost per Case													\$2.910	

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (IF IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
blood test	1	syringe and needle 2cc	1 each		1	1	1	100%	\$0.064	\$0.064	\$0.064
	1	VDRL kit	1 each		1	1	1	100%	\$0.391	\$0.391	\$0.391
	1	glass tube, blood, red top	1 each		1	1	1	100%	\$0.209	\$0.209	\$0.209
first line treatment	1	syringe and needle 2cc	1 each	benzathine penicillin G	1	1	1	90%	\$0.064	\$0.064	\$0.057
Average Cost per Case										\$0.721	

Gonorrhea/Chlamydia

SOURCE KENYA NASCOP

Note	Level of Care	Drug	Route	Dose		Unit	Times/Day	# Days	Formulation	Units Per Dose	Percent Cases Treated	Cost Calculation (US\$)		
												Median Unit Cost	Cost per Episode	W Aver T Cost
non pregnant	1	norfloxacin	PO	800	mg	tablet	1	1	400 mg	2	90.0%	\$0 395	\$0 791	\$0 712
	1	doxycycline	PO	100	mg	cap	2	7	100 mg	1	90.0%	\$0 029	\$0 412	\$0 371
pregnant	1	probenecid	PO	1	g	tablet	1	1	500 mg	2	10.0%	\$0 050	\$0 099	\$0 010
	1	amoxicillin	PO	3	g	cap	1	1	250 mg	12	10.0%	\$0 029	\$0 352	\$0 035
	1	augmentin	PO	250/125	mg	tablet	1	1	250/125 mg	1	10.0%	\$1 091	\$1 091	\$0 109
	1	erythromycin	PO	500	mg	tablet	4	7	250 mg	2	10.0%	\$0 049	\$2 739	\$0 274
Average Cost per Case														\$1 511

Note	Level of Care	Supply Item	Supply Unit	Name of Drug (if IM or IV)	# Units per Time	# Times	Total Units	Percent Cases Treated	Cost Calculation (US\$)		
									Median Unit Cost	Cost per Episode	W Aver T Cost
Average Cost per Case											\$0 000