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# Integrating tuberculosis case finding and treatment into postnatal care

Charity Ndwiga  
*Population Council*

Harriet Birungi  
*Population Council*

Chi-Chi Undie  
*Population Council*

Shiphrah Kuria

Joseph Sitienei

*See next page for additional authors*

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**Authors**

Charity Ndwiga, Harriet Birungi, Chi-Chi Undie, Shiphrah Kuria, Joseph Sitienei, and Sam Ochola

# APHIA II Operations Research Project in Kenya

623-A-00-09-00001-00



## Integrating Tuberculosis Case Finding and Treatment into Postnatal Care



Ministry of Public Health & Sanitation



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# **Integrating Tuberculosis Case Finding and Treatment into Postnatal Care**

**APHIA II Operation Research Project/Population Council**  
Charity Ndwiga, Harriet Birungi, Chi-Chi Undie

**Ministry of Public Health and Sanitation, Kenya**  
Shiphrah Kuria, Joseph Sitenei, Sam Ochola

**February, 2011**

## Contents

Acknowledgments .....	iii
Acronyms and abbreviations .....	iv
Executive Summary .....	v
Background and Statement of the Problem .....	1
Project Objective .....	2
Project Design .....	3
Intervention Description .....	3
Evaluation of the Intervention .....	6
Ethical considerations .....	7
Analysis .....	7
Key Findings .....	7
Result 1: Screening for TB among PNC Clients .....	7
Result 2: TB case detection, treatment and referral .....	8
Result 3: Effect of integration of TB screening into PNC on quality of care .....	9
Conclusions and Recommendations .....	11
Annex I: The training module on integrating TB into post natal care services ...	13
Annex II: Monthly monitoring data .....	20
Annex III: TB screening job aid .....	22
Annex IV: Components of targeted postnatal care .....	23

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## Acronyms and abbreviations

AIDS	Acquired Immuno Deficiency Syndrome
APHIA	AIDs Population and Health Integrated Assistance
ANC	Antenatal Clinic
CWC	Child Welfare Clinic
DHMT	District Health Management Team
DLTLD	Division of Leprosy, Tuberculosis and Lung Disease
DH	District Hospital
DRH	Division of Reproductive Health
FANC	Focused Antenatal Care
FP	Family Planning
HC	Health Centre
HIV	Human Immuno-deficiency Virus
KEN/M	Kenya Enrolled Nurse/Midwife
KRN/M	Kenya Registered Nurse/Midwife
Lab Tech	Laboratory Technician
LAM	Lactational Amenorrhoea Method
MCH	Maternal and Child Health
MH	Maternity Hospital
MOH	Ministry of Health
MO	Medical Officers
NASCOP	National AIDS and STDs Control Program
NCC	Nairobi City Council
PMCT	Prevention of Mother to Child Transmission
PMH	Pumwani Maternity Hospital
PNC	Post Natal Care
PMO	Provincial Medical Office
PHO	Public Health Officer
PTB	Pulmonary Tuberculosis
RCO	Registered Clinical Officer
RH	Reproductive Health
STI	Sexually Transmitted Infections
TB	Tuberculosis

## Executive Summary

In order to address the new challenges posed by Tuberculosis in the face of the HIV epidemic and the socio-economic environment, Kenya, through the Ministry of Public Health and Sanitation, the Division of Leprosy, Tuberculosis and Lung Disease (DLTLD), has identified effective coordination of TB control activities, stronger collaboration between TB and HIV control programmes in order to promote delivery of integrated TB/HIV services, and health care worker training and support to promote early care seeking and adherence to treatment at community level and better TB case management by health care providers among the key interventions.

Under the USAID funded FRONTIERS program, the Population Council conducted a study in six health facilities in Western Kenya that demonstrated that screening for TB within antenatal care (ANC) setting is feasible and acceptable among the service providers. These findings led to the introduction of TB screening in ANC services. However, a major challenge remains although TB detection is encouraged among ANC clients within the Maternal and Child Health (MCH) clinics in the country, providers in these settings fail to appreciate the need for a continuum of care from pregnancy through to post-natal period. The Ministry of Health (MOH) guidelines on postnatal care (PNC) also do not focus on TB detection and its management for mothers and their babies. In order to address this gap, APHIA II Operations Research Project developed and tested an intervention to improve TB screening, case detection, treatment and care among postnatal women. The intervention involved four major complementary activities implemented over a period of six months (February to July 2010) in five facilities in Nairobi Province:

- Developing and pretesting materials
- Improving provider knowledge on TB integration into PNC
- Reorganizing client flow
- Support supervision and strengthening data management

The intervention was evaluated using a pre and post-design. The key findings were as follows:

***Improving provider knowledge on TB integration into PNC:*** Ninety-two (92) service providers from the five intervention sites were trained using the new materials, in addition to the MOH-DRH Targeted Postnatal Care Orientation Package. The training was conducted in four groups with each lasting five days. A pre and post test exam showed improvement in provider knowledge -- 40% at pre test to 100% during the post test.

***Screening for TB among PNC Clients:*** A comparative analysis of client-provider interaction at baseline and endline demonstrates a significant increase of TB screening among PNC clients – 66% of clients were screened for at least one of the symptoms, compared to 4% at baseline.



***TB case detection, treatment and referral among postnatal mothers:*** Of 12,604 PNC clients screened for TB, only 15 (0.11%) were suspected to have TB, based on the screening tool. All 14 clients suspected to have Pulmonary TB were immediately referred to the laboratory for sputum specimen collection and test. Twelve of these were confirmed to have TB and referred to TB clinic within the respective facility for treatment.

***Effect of integration of TB screening into PNC on quality of care:*** Quality of care for integrated PNC and TB screening significantly improved. A comparison of baseline and endline scores across 10 components namely, (1) history taking, (2) obstetric history taking, (3) counseling on maternal danger signs, (4) counseling on neonatal danger signs, (5) physical observation and examination, (6) counseling and testing for STI and HIV, (7) Mother's self care, (8) FP counseling, (9) continuity of care, and (10) TB screening showed that the project interventions had a highly significant effect on all 10 components of PNC.

The findings demonstrate that it is feasible to use PNC services as a platform for TB screening and case detection. However, the actual cases detected to have TB were extremely low even though the facilities were located in areas expected to have high prevalence. It might be important for program managers and policy makers to decide whether routine TB screening in RH services is justifiable, given the very low cases of TB detected. Strategic considerations on whether to or not to integrate TB into RH services may need to be based on good epidemiological data on TB in Kenya. A policy debate on whether to link TB services with RH services is necessary before full scale-up of this intervention.

## Background and Statement of the Problem

Tuberculosis (TB) remains a major public health problem globally, with an estimated one third (1.86 billion) of the world's population infected. TB kills more adults than malaria and is one of the leading causes of mortality among women of reproductive age worldwide.<sup>1</sup> Kenya is ranked 13<sup>th</sup> among the 22 high burden countries that collectively contribute to about 80% of the world TB cases. Incidence of the disease increased almost ten times over the last 20 years mainly due to HIV/AIDS pandemic, poor socio-economic status especially in overcrowded slum dwellings in urban and peri-urban areas, and limited access to health services (DLTLD, 2009). The disease accounts for over 145,000 discounted life years lost in the country with the situation being worse for females in the reproductive age group.<sup>2</sup> The Division of Leprosy, Tuberculosis and Lung Disease (DLTLD) has identified TB case finding and provision of efficacious chemotherapy as the mainstay of the TB control activities (DLTLD, 2009). The aim of TB screening is to diagnose and treat cases as early as possible, mainly through passive case finding and contact tracing.

According to Pillay et al. (2004)<sup>3</sup>, tuberculosis is the most common HIV-1-related disease and the most frequent cause of mortality in young women in high prevalence regions. Tuberculosis and HIV-1 are independent risk factors for maternal mortality and adverse perinatal outcomes, and in combination have a greater impact on these parameters than their individual effects. In referral health centres in southern Africa, around one-sixth of all maternal deaths are due to tuberculosis/HIV-1 co-infection. About one-third (37%) of HIV-1-infected mothers with tuberculosis are severely immuno-compromised, with CD4 counts of fewer than 200 cells/microL, compared with 14-19 percent in mothers recruited into major mother-to-child intervention trials in Europe (ibid). Babies born to mothers with tuberculosis/HIV-1 co-infection also have higher rates of pre-maturity, low birth weight, and intrauterine growth restriction. Transmission rates of HIV-1 from mother to infant are around 25-45 percent in resource-limited settings, while that for mother-to-child-transmission of tuberculosis is 15 percent within 3 weeks of birth.

A Population Council study in 2007 in six health facilities in Western Kenya demonstrated that screening for TB within antenatal care (ANC) setting is feasible and acceptable among the service providers (Mwangi et, al, 2008)<sup>4</sup>.

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<sup>1</sup> USAID Bureau for Africa, Office of Sustainable Development Tuberculosis in Africa Old Scourge, New Alliance No. 1 2000

<sup>2</sup> WHO (Communicable Disease Geneva) Global Tuberculosis Control, Surveillance, Planning, Financing WHO Report 2003.

<sup>3</sup> Pillay T, Khan M, Moodley J, Adhikari M, and Coovadia H. "Perinatal Tuberculosis and HIV-1: considerations for resource-limited settings", *Lancet Infect Dis.* 2004 Mar; 4(3): 155-65.

<sup>4</sup> Mwangi. A, Waswa. D and Warren. C. Integrating Tuberculosis Case Finding and Treatment into Focused Antenatal Care in Kenya: Population Council, April 2008. Un published.

These findings led to the introduction of TB screening in ANC services. Although TB detection is encouraged among ANC clients within the Maternal and Child Health (MCH) clinics in the country, providers in these settings fail to appreciate the principle of continuum of care from pregnancy through to post-natal period. The Ministry of Health (MOH) guidelines on postnatal care (PNC) do not focus on TB detection and its management for mothers and their babies.

The recommended package of services only includes three scheduled visits whose consultations emphasize the identification of danger signs or disease that contribute directly to maternal and neonatal death. Although counselling for HIV is recommended as part of the standard postnatal care package, little effort has been made to increase detection of TB among HIV-positive mothers and their babies, even though it has been established that at least one out of every eight (13%) HIV-positive patients is co-infected with TB (KAIS, 2007). This lack of integration of TB in PNC implies a missed opportunity for screening for the disease among mothers and their babies, despite it being a public health concern even in the absence of HIV. Utilizing PNC services to screen for TB therefore provides a platform for early case detection and management of the disease.

In order to address this gap, the APHIA II Operations Research (OR) project conducted a study to determine if PNC providers, in addition to providing routine postnatal care services, could also screen and assess the client's need for TB services and refer suspected cases for management. A key hypothesis of the project is that the introduction of TB screening in the postnatal clinic will significantly increase: (1) the proportion of women detected to have TB during postnatal period, (2) the proportion of HIV-positive women screened for TB, and (3) the number of women being treated jointly for active TB and HIV. The project responds to the World Health Organization's (WHO) *STOP TB* strategy, and the MOH's intensified TB case finding in prevention and control of the disease as well as repositioning PNC within the DLTLD and Division of Reproductive Health (DRH) respectively.

## **Project Objective**

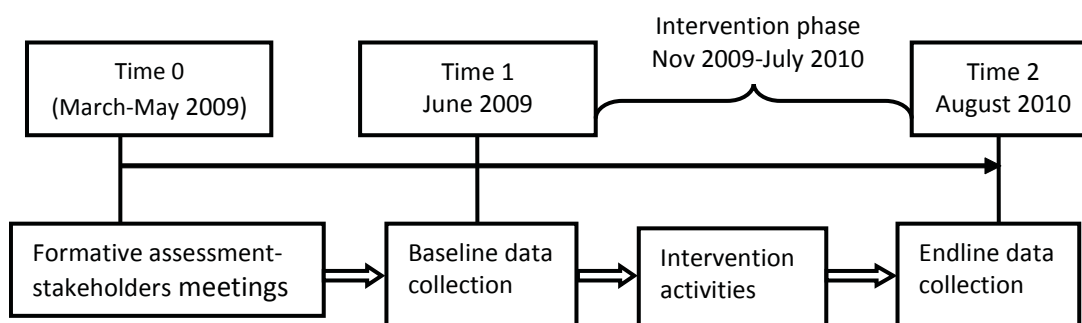
The overall objective of the project is to improve access to care and treatment for TB for postnatal women and their babies. Specifically, the project sought to:

- 1) Improve procedures and protocols for TB and PNC services through strengthening linkages that improve quality of care;
- 2) Improve knowledge about TB among health workers providing PNC services, and strengthen their capacity to detect TB in postnatal women, and to refer and/or manage suspected cases;
- 3) Improve the referral mechanism for managing and treating TB among postnatal women and their babies exposed to TB infection; and
- 4) Evaluate the effect of the intervention on integrating TB screening and case detection, and overall quality of care for PNC services.

## Project Design

The project used a pre- and post-intervention design with no control group. It was implemented between March 2009 and August 2010 in five health facilities located in the low income areas of Nairobi, which are also known to have relatively high prevalence of both HIV and TB. These included Pumwani Maternity Hospital (the largest maternity hospital in East and Central Africa), Mathare North Health Centre, Kayole Health Centre, Langata Health Centre, and Mbagathi District Hospital. The project was preceded by a formative assessment in the form of consultations with DRH, DLTLD, APHIA II Nairobi, the Provincial Medical Officer (PMO) - Nairobi, the Medical Officer of Health- City Council of Nairobi, and facility in-charges to obtain information on whether the facilities were providing TB and PNC services as part of the routine services. The discussions aimed at examining the existing linkages and referral mechanisms between PNC and TB services, as well as the availability of commodities and supplies for TB management within MCH setting to determine facility readiness to integrate TB case finding into PNC services. The schematic presentation of the study design is given in Figure 1.

**Figure 1: Schematic presentation of the study design**



## Intervention Description

The interventions were implemented over a period of six months from February to July 2010 and involved four major activities:

- 1) Developing and pretesting materials
- 2) Improving provider knowledge on TB integration into PNC
- 3) Reorganizing client flow
- 4) Support supervision and strengthening data management

### Activity 1: Developing and pre-testing materials

This activity was informed by the formative assessment and aimed at ensuring that the project used standard materials that had been approved by the stakeholders. Three stakeholder meetings were held with DRH, DLTLD, NASCOP, City Council of Nairobi (CCN), and APHIA II OR team to build consensus on the training materials and the content of TB prevention

and detection. The materials developed included: (1) a training module on prevention, control, detection and management of TB for the mother and baby during the post-partum period; (2) a Job Aid on TB screening during PNC; and (3) a monthly monitoring data tool for TB screening during PNC.

The training module covered the magnitude of TB, effects and management of TB during the postnatal period, as well as TB and HIV management for mother and the newborn (see Annex I). The Job Aid was adapted from the 2009 National Guidelines for TB and Leprosy Control and included the five cardinal signs and symptoms for TB- persistent cough for three or more weeks with or without blood stained sputum; chest pain; close contact with a person suffering TB; loss of body weight; and intermittent fever and night sweats (see Annex II). The existing PNC and TB registers were modified, through consultations with DLTLD and DRH, to capture information on screening for TB during the post-partum period, which was then reported using a monthly data tool developed for the project (see Annex III). All the materials were pre-tested with a group 25 individuals comprising nurses from MCH units, clinical officers offering TB services, and representatives of DHMT, and revised accordingly.

#### **Activity 2: Improving provider knowledge on TB integration into PNC**

Ninety-two (92) service providers from the five intervention sites were trained using the new materials, in addition to the MOH-DRH Targeted Postnatal Care Orientation Package. The training was conducted in four groups with each lasting five days. The participants included the members of the DHMT, the staff in charge of facilities, and first-line providers working in MCH units and the TB clinics. About two-thirds of the providers who were trained were enrolled or registered nurses/midwives (Table 1). Six of the trainees were drawn from the TB clinic.

**Table 1: Distribution of trained service providers by cadre**

	KEN/M	KRN/M	Lab Tech	RCO	MO	DHMT	Tutors	PHO	Total	TB Clinic
Kayole HC	1	4	1	1	0	0	0	1	8	1
Mbagathi DH	3	11	0	0	1	0	0	1	17	1
Langata HC	2	6	1	0	0	2	0	1	14	1
Mathare North HC	4	4	0	2	0	1	0	1	13	1
Pumwani MH	13	15	2	2	1	2	2	1	41	2
Total	23	40	4	5	2	5	2	5	92	6

KEN/M: Kenya Enrolled Nurse/Midwife; KRN/M: Kenya Registered Nurse/Midwife; Lab Tech: Laboratory Technician; RCO: Registered Clinical Officer; MO: Medical Officers; DHMT: District Health Management Team; PHO: Public Health Officer; TB: Tuberculosis; HC: Health Centre; DH: District Hospital; MH: Maternity Hospital.

The training involved illustrated lectures for three days during which demonstrations on how to use the TB Job Aid were conducted. These were followed by half-day practical experience at a health facility, where the trainees practiced providing PNC with TB screening as well as the appropriate use of PNC and TB registers. At the end of each workshop, service providers from the same facility developed respective implementation work plans to be followed during support supervision. A standard pre- and post-test exam was administered to measure the knowledge on post-natal care and TB before and after the training. From the result of the pre- and post-test it was evident that learning took place (see Table 2).

**Table 2: Percent pre and post-test results scores for the four trainings conducted**

	1st training		2nd training		3rd training		4th training	
Scores	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Average	74	90	70	83	71	83	75	83
Lowest	40	72	48	60	48	56	48	60
Highest	92	100	96	100	88	96	96	96

### **Activity 3: Re-organization of client-flow**

The recommended PNC components include examination of mother and baby to rule out complications, counseling for danger signs, providing information on care for baby and mother, counseling and testing for HIV and FP. A client flow analysis undertaken during the formative stage showed that although the individual components were being offered daily in all the facilities, they were not available as a comprehensive package under one unit. There was also inadequate infrastructure (room/couch) in almost all of the intervention sites to offer comprehensive postnatal care services. In this context, clients would queue for their babies' immunization in one unit and again for the postnatal/FP services in another.

The APHIA II OR project and MOH reorganized the client flow in four of the five health facilities included in the study (Pumwani Maternity Hospital, Mathare North Health Centre, Kayole Health Center and Mbagathi District Hospital) to facilitate easier provision of PNC and TB screening services. In the reorganised services, mothers who had queued for baby immunization services in the child welfare clinic (CWC) room were fast-tracked to the PNC services, to avoid queuing again. In Langata Health Centre, a room was identified to serve as a one-stop unit for PNC services.

### **Activity 4: Supportive supervision and strengthening clinic readiness**

The PHMT and the DHMTs in the zones where the project sites are located conducted bimonthly supervision visits in the intervention sites in the early phase of the project, to support the implementation of the action plans developed

during training. These were later followed by two quarterly support supervision visits by the same team, during which the quality of PNC, TB screening, and data management and record keeping were strengthened. Discussions were also held with the providers to come up with solutions to weaknesses/problems identified during the visit. The MOH-DRH reproductive health supervision tool with an addendum to include TB screening during the postnatal period was used during the support supervision. In addition, APHIAII OR in collaboration with DRH, DLTD, and the PHMT equipped the facilities with TB drugs, TB registers and Cards necessary for integrating TB into postnatal care.

## **Evaluation of the Intervention**

The project was evaluated at the end of the intervention period. Data collection involved:

- 1) Facility assessment;
- 2) Provider interviews;
- 3) Observations of client-provider interaction;
- 4) Client exit interviews;
- 5) Review of PNC and TB registers;
- 6) Client flow analysis.

**Facility assessment:** This aimed at assessing the facility preparedness to integrate TB into PNC services. It involved structured interviews with the staff in charge of clinic at the five intervention facilities to determine availability of infrastructure, equipment and supplies. A nurse working as a research assistant spent half a day at each clinic completing the clinic inventory using an observation checklist. Information was collected on staffing; staff update/training on PNC and TB in the last 24 months; availability of TB screening reagents within the facility; TB drugs; supplies for PNC services (general supplies for examining a postnatal mother); and FP commodities.

**Provider interviews:** Short structured interviews with 37 service providers at baseline and 32 providers at endline were conducted to assess their training, knowledge, and practices regarding the following: post-natal care; TB screening and management; HIV counseling and testing; and family planning during the postnatal care period. The interviews targeted all providers working within MCH units in all the five intervention clinics.

**Structured observations of client-provider interactions:** Trained nurses observed and recorded on a standardized checklist all aspects of postnatal care consultations as well as TB screening including providers' competence and ability to provide quality integrated PNC and TB services. Clients were assigned numbers as they entered the MCH unit. The research assistant picked every second client that was visiting the clinic for postnatal care services for up to six clients for every scheduled visit according to the MOH guidelines, that is, the

first visit within 48 hours, second visit within 2 weeks, and third visit within 4-6 weeks. Six client-provider interactions were observed for each category at each clinic. A total of 95 observations were conducted at baseline (out of a proposed sample size of 90) while 96 observations were conducted at endline.

*Client exit interviews:* After each observation, short exit interviews were conducted with each consenting client after the consultation to explore their perceptions of the competence of the providers and their overall impression of the services received. All the clients who were observed consented to the exit interviews at both baseline and endline.

*Review of client PNC registers:* All PNC clients are registered for the services within the MCH unit. All PNC and TB registers in all the five facilities covering the six-month period from February to July 2010 were reviewed to determine the number of PNC clients, how many of these clients were screened for TB, and the number that was diagnosed with and treated for TB.

## **Ethical considerations**

Written informed consent was obtained for all the respondents in the study including service providers and PNC clients. The Population Council Institutional Review Board, the Kenya Medical Research Institute, and the National Council of Science and Technology granted ethical and research clearance for the study.

## **Analysis**

Data analysis involved simple descriptive statistics (frequencies, percentages and means) together with the relevant significant tests (of means and proportions) to determine if there are any significant differences in the indicators of interest between baseline and endline measures for the interventions to be considered to have had an impact.

## **Key Findings**

### **Result 1: Screening for TB among PNC clients**

TB screening was based on a job Aid that required providers to find out whether the client had any history of the five common signs and symptoms of TB - (i) persistent cough for three or more weeks with or without blood stained sputum, (ii) chest pain; (iii) close contact with a case of TB, (iv) loss of body weight, and (v) intermittent fever and night sweats. A comparative analysis of client-provider interaction at baseline and endline demonstrates a significant increase of TB screening among PNC clients (Table 3) – 66% of clients were screened for at least one of the symptoms, compared to 4% at baseline. However, less than a quarter of the clients (21%) were screened for all five tracer signs and symptoms for TB.



**Table:3 Screening for TB among PNC Clients**

	Observations	
	Baseline (N=95) %	Endline (N=96) %
History asked on symptoms and signs		
Persistent cough for three or more weeks with or without blood stained sputum	3	64**
Chest pain	2	51**
Close contact with a case of TB	1	44**
Loss of body weight	1	38**
Intermittent fever and night sweats	1	41**
Clients screened on at least <b>ONE</b> TB sign/symptom	4	66**
Clients screened all the <b>FIVE</b> TB signs/symptoms	0	21**
Clients suspected to have TB and referred for TB test	0	3

Notes: TB: tuberculosis; PNC: post-natal care; Differences between baseline and end line are statistically significant at: \*p<0.05; \*\*p<0.01

## Result 2: TB case detection, treatment and referral

According to the current TB and Leprosy Control guidelines<sup>5</sup>, clients who report to have had persistent cough for two to three weeks with or without blood should be suspected to have Pulmonary Tuberculosis (PTB) and require further investigation to confirm the diagnosis. Within PNC, the process requires providers to complete a referral form for the client to take to the laboratory for a sputum specimen for Acid Fast Bacilli test to identify the bacteria that causes TB- Mycobacterium bacilli. At the laboratory, the client is given another sputum pot to take home and asked to produce an early morning sputum specimen the following day for re-confirmatory test. The two specimens should be taken within 24 hours apart. PNC clients with a positive sputum smear are then referred to the TB ward within the facility where they are started on TB treatment.

A review of PNC service statistics at the five intervention facilities shows that of all the 12,604 PNC clients screened for TB during the intervention period, only 15 (0.11%) were suspected to have TB, based on the screening tool. Fourteen of them had reported persistent cough for two or three weeks, while one had a history loss of body weight. All 14 clients suspected to have Pulmonary TB were immediately referred to the laboratory for sputum specimen collection and test. Twelve of these were confirmed to have TB and referred to TB clinic within the respective facility for treatment. For the client with a history of loss of body weight, the TB diagnosis was confirmed through a chest X-ray. TB/HIV co-infection was detected in only 3 of the 14 clients (Table 4).

<sup>5</sup> Ministry of Public Health and Sanitation Division of Leprosy, Tuberculosis and Lung Disease (September 2009) DLTLD Guidelines on Management of leprosy and Tuberculosis.

**Table 4: Number of PNC clients suspected and diagnosed with TB**

	Pumwani	Kayole	Mathare	Mbagathi	Langata	Total
PNC clients screened	97% (n=9183)	100% (n=2039)	100% (n=862)	87% (n=63)	99% (n=785)	97% (n=12932)
PNC clients suspected to have TB	8 (n= 9050)	3 (n=2039)	2 (n=862)	0 (n=55)	2 (n=779)	15 (n=12,604)
PNC clients with TB positive sputum smear	8*	2	2	0	1	14

Notes: TB: tuberculosis; PNC: post-natal care

\*Three of the eight clients diagnosed with TB were also co-infected with HIV

### **Result 3: Effect of integration of TB screening into PNC on quality of care**

The 2008 PNC package developed by DRH/MOH recommends that clients should make three targeted PNC visits. The 1<sup>st</sup> visit should occur within the first 48 hours after delivery, the 2<sup>nd</sup> within two week after delivery, and the 3<sup>rd</sup> should happen four to six weeks after delivery. On each visit the mother is expected to receive a range of services organized around 9 components: (1) history taking, (2) obstetric history taking, (3) counseling on maternal danger signs, (4) counseling on neonatal danger signs, (5) physical observation and examination, (6) counseling and testing for STI and HIV, (7) Mother's self care, (8) FP counseling, and (9) continuity of care. A 10<sup>th</sup> component on TB screening was added on the existing PNC package as part of this intervention. A detailed description of services offered and assessed under each component is included in Annex IV.

Quality of care for integrated PNC and TB screening was assessed using a scale aggregating the 10 components described above. The scores were generated from observations of client-provider interactions during the three PNC visits. A mean score was computed for each component and for each visit; these were then compared using statistical tests between baseline and endline. Mean scores for each component per visit are summarized in Table 5. A comparison of baseline and endline score shows that the project interventions had a highly significant effect on all 10 components of PNC.

**Table 5: Quality of care under an integrated PNC/TB package**

Components	Baseline				Endline			
	Visit <sub>1</sub> (n=38)	Visit <sub>2</sub> (n=36)	Visit <sub>3</sub> (n=22)	Total (n=96)	Visit <sub>1</sub> (n=34)	Visit <sub>2</sub> (n=35)	Visit <sub>3</sub> (n=29)	Total (n=98)
History taking (0-8)	0.82	0.94	0.55	0.80	3.79**	3.51**	2.79**	3.4**
Obstetric history taking (0-6)	0.95	1.69	0.95	1.23	4.24**	3.91**	3.1**	3.79**
Counseling on maternal danger signs (0-8)	0.13	0.06	0.00	0.07	2.56**	1.97**	1.39**	2.01**
Counseling on neonatal danger signs discussed (0-5)	0.05	0.19	0.09	0.11	2.12**	2**	1.17**	1.79**
TB screening (0-6)	0.11	0.08	0.05	0.08	3.63**	2.37**	1.07**	2.4**
Observations and physical exams (0-9)	0.50	0.89	0.86	0.73	4.75**	4.14**	3.45*	4.14**
STI/HIV counseling (0-10)	0.58	0.64	0.77	0.65	2.79**	2.43**	1.55*	2.29**
Advice on mother's self care (0-3)	0.68	0.63	0.23	0.56	1.63**	1.26**	0.83*	1.25**
Counseling on LAM (0-3)	0.42	0.49	0.41	0.44	1.42**	1.6**	0.97*	1.35**
Continuity of care (0-5)	3.13	3.89	3.14	3.42	4.09**	3.97	3.97*	4.01**
Observations and physical exams for baby (0-4)	0.58	0.28	0.41	0.43	2.26**	1.69**	0.86	1.64**

Notes: PNC: Postnatal care; TB: tuberculosis; STI: sexually transmitted Infections /HIV; LAM: Lactational amenorrhea method; Visit<sub>1</sub>: within 48 hours; Visit<sub>2</sub>: within 2 weeks; Visit<sub>3</sub>: within 4-6 weeks; Differences between baseline and end line are statistically significant at: \*p<0.05; \*\*p<0.01.

## Conclusions and Recommendations

This project had four major objectives of: (1) improving provider knowledge; (2) documenting the feasibility of integrating TB into postnatal care; (3) improving procedures and protocols referral mechanisms for PNC TB clients; and (4) evaluating the effect of TB screening, case detection and treatment on PNC clients.

The findings show that provider knowledge of TB screening, detection and PNC improved as a result of the training received. In addition, screening for TB and linking clients suspected to have TB for further investigations and treatment significantly improved. Screening for TB among PNC clients was based on a job aid that included five tracer conditions adapted from a WHO TB screening tool. Full application of the job aid in screening of PNC clients for TB was limited in the sense that not all clients were asked about all the five tracer conditions. In terms of promoting utilization of the screening tool, a much shorter version (including only 2-3 tracer conditions) focusing on commonly asked tracer conditions would equally serve the same purpose.

Although there is no empirical evidence of how integration of RH/HIV services affects quality of care, there are suggestions in the literature that it may contribute positively or negatively<sup>6,7</sup>. Findings from this study demonstrate that the process of integrating TB screening into PNC positively contributed to the overall quality of PNC. Moreover, this intervention provided opportunity to re-establish and re-organize PNC services at the study facilities.

The findings demonstrate that it is feasible to use PNC services as a platform for TB screening and case detection. However, the actual cases detected to have TB were extremely low despite the facilities being located in areas expected to have high TB prevalence.

In response to WHO evidence that Kenya is among 22 countries worst hit by TB worldwide, the Population Council has since 2007 tested two interventions to promote TB case detection in RH services. The first intervention was designed to improve TB screening and case detection in focused ANC in two districts in Western Kenya. This intervention contributed to more women getting screened for TB than would have been the case. However, actual numbers of clients detected to have TB were low. This current study was designed to improve screening and detection in PNC services, in facilities serving residents of slum areas in Nairobi suspected to have a high TB prevalence. However, the findings are almost similar to those from the Western Kenya study - although TB screening increased detection of actual TB cases remained extremely low.

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<sup>6</sup> Liambila W., Mullick S., Askew I., Broutet N., Mohammed I., Awuor C., Kigen B., Mutunga C. *et al.* 2010. Introducing and Pilot-testing the National Guidelines on Integrating the Management of STIs/RTIs into Reproductive Health Settings in Kenya; Population Council: Nairobi, Kenya.



<sup>7</sup> Yoder, P. Stanley, and Yared Amare. 2008. *Integrated Family Planning and VCT Services in Ethiopia: Experiences of Health Care Providers*. Qualitative Research Studies No. 14. Calverton, Maryland, USA: Macro International Inc

It might be important then for program managers and policy makers to decide whether routine TB screening in RH services is justifiable given very low cases of TB detected. Strategic considerations whether to or not to integrate TB into RH services may need to be based on good epidemiological data on TB in Kenya. A policy debate on whether to link TB services with RH services is also necessary before full scale-up of this intervention.

# Annex I: The training module on integrating TB into post natal care services

**Integrating Tuberculosis screening in postnatal period**

Division of Leprosy, Tuberculosis and Lung Disease (DLTLD)  
Division of Reproductive Health (DRH)  
APHIA II Operations Research Project/Population Council



**Goal**

- To strengthen the capacity of postnatal care services providers to integrate TB services into postnatal care services.

2

**Objectives**

By the end of this session the participants will be able to:

- Describe the epidemiology of TB in Kenya
- Strengthen the capacity to refer and/or manage postnatal mothers and their babies suspected to have TB
- Provide TB/HIV collaborative services to TB/HIV co-infected postnatal mothers and their babies
- Provide care and follow up of postnatal mothers and their babies with TB disease

3

**Why integrate TB into PNC services.**

- TB is public health concern in Kenya; Kenya is 13<sup>th</sup> of the 22 TB high burden accounting 80% of global TB burden
- HIV is the biggest risk factor for TB disease; HIV+ person have 10% annual risk of TB disease and 50% lifetime of developing TB disease.
- TB is the leading cause of mortality of PLWHA

4

**Why integrate TB into PNC services...**

- TB is one of the leading infectious causes of death among women of reproductive age
- HIV prevalence among pregnant women is 9.6 % (KAIS,2007)
- This women are eligible for TB screening according to the national TB/HIV guidelines
- Children born to smear positive are at high risk of TB infection.

5

**Why integrate TB into PNC services..**

- Postnatal care is one of the most important maternal health-care services that provides continuum of care from the ANC, labor and delivery and postnatal care
- All these mothers visits health facilities for their babies' immunization and growth monitoring and this offers an opportunity for TB screening and management.

6

Integrating TB into Post Natal Care services

## TUBERCULOSIS

7

### What is tuberculosis?

- Tuberculosis is a chronic infectious disease caused by a bacillus called mycobacterium tuberculosis.
- This is acid fast rod shaped bacillus (AFB).

8

### What is tuberculosis?

- Mode of transmission – coughing, sneezing, laughing and even talking.
- Natural history of infection:
  - Most infections do not lead to disease, the TB germs are contained by the immune system, and remain dormant for the rest of a person's life without any problem.

### Risk of TB infections

- Exposure of bacilli
- Duration of exposure with pulmonary tuberculosis
- Intensity of exposure
- Undetected smear positives TB

10

### Risk Factors for Tuberculosis Disease

#### Major risk factors

- HIV infection
- Time since infection
- Poorly treated previous TB

#### Other factors:

- Age ( extremes of age)
- Sex ( males more than females?)
- Malnutrition
- Diabetes
- Silicosis
- Other conditions e.g. immune-suppressing therapy

11

### Clinical forms of Tuberculosis

Pulmonary TB	Extra-pulmonary TB (TB outside the lung) Virtually any body organ can be affected	
• Smear positive PTB	• Lymph nodes	• Kidneys
• Smear negative PTB	• Pleura	• Bladder
	• Pericardium	• Skin
	• Meninges	• Eyes
	• Bones	• Gastro-intestinal system
	• Spine	

12

### Pulmonary (Lung) TB signs and symptoms

- Cough lasting for more than 2 weeks with or without blood stained sputum
- Chest pain
- Excessive night sweats
- Intermittent fever
- Loss of appetite
- Loss of body weight
- Excessive tiredness and generally feeling unwell

13

### TB screening for Children

Symptom	YES	NO
1. Cough: (of any duration)?		
2. Blood stained sputum?		
3. Night sweats >2 weeks		
4. Fever? Of any duration?		
5. Weight loss?		
6. Chest pain?		
7. Fast Breathing?		
8. Fatigue?		
9. History of previous TB treatment?		
10. History of close contact with a person confirmed to have TB?		
11. Swellings in the neck, armpits or elsewhere?		
12. Diarrhea for more than two weeks?		
13. Failure to thrive?		

16

### TB of the glands: signs and symptoms

- Slow painless enlargement of the lymph nodes which then become matted and eventually discharge pus
- The most commonly affected lymph nodes are glands of the neck (cervical lymph nodes)
- Lymph node enlargement is becoming common in HIV related TB

14

### Results of TB screening

- If “Yes” to question one: Do sputum test and carry out clinical evaluation of the patient using the algorithm of diagnosing PTB below.
- If “No” to question 1 and “Yes” to any other question; continue investigating for TB according to clinical signs. Refer when necessary.
- If “No” to all questions: Stop investigation for TB and repeat intensive detection during the next medical visit.

17

### TB Screening for Adults

Symptom	YES	NO
1. Cough (> 2 weeks)?		
2. Blood stained sputum?		
3. Night sweats >2 weeks		
4. Fever ?		
5. Weight loss?		
6. Chest pain?		
7. Breathlessness?		
8. Fatigue?		
9. History of previous TB treatment?		
10. History of close contact with a person confirmed to have TB?		
11. Swellings in the neck, armpits or elsewhere?		
12: Diarrhea for more than two weeks?		

15

### PTB Diagnosis

- PTB is detected by examining two separate sputum specimens which should be collected at least within 24 hours
  - 1<sup>st</sup> specimen to be taken immediately TB is suspected in facility and delivered to the laboratory on the same day
  - The 2<sup>nd</sup> specimen is collected in the early morning of the following day at home and taken to the laboratory
- Usually referred to Spot Morning(SM) specimen
- The results should be made available within the 24 hours time frame

**NOTE: A specimen collected under the supervision of a health worker is likely to be better than one under No supervision**

18



## PTB Diagnosis..

- Sputum smear examination for acid fast bacilli (AFB) confirms the diagnosis and therefore the drug regimen to be used.
- Negative smear test for TB does NOT exclude TB; consider other signs and symptoms and refer

19

## Case Definition for Smear Positive PTB

A patient with:

- At least two initial sputum smear examinations positive for acid-fast bacilli (AFB) by microscopy.
- One sputum smear examination positive for AFB plus radiographic abnormalities consistent with active PTB as determined by clinician, or
- One sputum specimen positive for AFB plus sputum culture positive for *M. tuberculosis*.

22

## Process of taking sputum

- ASK client to rinse the mouth first if had taken some food shortly before sputum collection
- Then ask client to cough deeply
- Ensure no one is standing in front of the patient while producing the sputum
- Encourage the patient not to contaminate the sputum container
- The sufficient amount of the sputum should be 3-5mls and **contains no saliva**

20

## Case definition of smear negative PTB

A patient with:

- Sputum smears have remained negative
- Compatible clinical features
- Compatible chest x-ray
- No response to antibiotics

23

## After sputum collection

- Ask the patient to place the lid of the sputum container and close it firmly
- Let them wash hands with soap and water
- Store the sputum specimen in a cool and dark place
- Send the sputum the specimen to the lab as soon as possible (within 24hrs)
- Accompany each specimen with a properly completed LAB request form

21

## Aims of TB treatment

- To cure patient of TB
- To prevent death from TB
- To decrease TB transmission
- To reduce TB relapse/recurrence
- To prevent drug resistance

24

## Principles of TB treatment

- Never use single drugs
- Always use drugs in combinations –using Fixed Dose Combinations (FDCs)
- Drug dosage based on weight
- Drug intake should as far as possible be directly observed.
- Ensure the entire 6-8 months treatment is taken

25

## Common side effect of TB drugs

Drug	Common Side Effect
• Isoniazid (H)	<ul style="list-style-type: none"> <li>• Peripheral neuropathy and hepatitis</li> <li>• GI disturbances, hepatitis Red-dicoloration of body fluids</li> <li>• Joint pains auditory and vestibular damage may damage the kidney</li> <li>• Optic neuritis</li> </ul>
• Rifampicin ( R )	
• Pyrazinamide (Z)	
• Ethambutol (E) , (RHZE)	
All drugs may cause skin rash.HIV prone to more and serve side effects	

28

## TB treatment regimens

Category	Purpose	Drug Regimen
Cat I	Smear positive PTB/Severe forms of TB	2ERHZ/6HE (4RH)
Cat II	Re-treatment	2SRHZE/1RHZE/5RHE
Cat III	Smear negative/ Extra pulmonary PTB	2RHZE/6HE (4RH)
Children	All forms	2RHZ/4RH

- **Use of fixed dose combinations (FDC's)**
- **Direct observation of pill swallows (DOT)**

## TB/HIV collaborative activities

Objective	Activity	Progress
To establish mechanisms for collaboration	Setting up coordinating bodies for TB/HIV activities at all levels: Nationally, Province and the Districts Conduct surveillance of HIV prevalence amongst TB patients	Done since 2005
To decrease the burden of TB in PLWHA	Establishing intensified case finding Introduction of IPT Ensure infection control in health care and congregate settings	Delayed: starting
To decrease the burden of HIV amongst TB patients	Provide HIV testing and counselling (DTC) Introduce HIV prevention methods Introduce CPT Ensure HIV/AIDS care and support Introduce ART	Done since 2005

## TB treatment...

- The drugs collection
  - Initial Phase -weekly
  - Continuation phase- every 2 weeks (TB guidelines PG 24)
- Follow up sputum months 2,4/5,6
- Defaulter tracing

27

## TB Health education

- TB is highly infections (PTB).
- Risk of infecting others especially breast feeding baby
- Need for TB screening of contact (contact invitation)
- **Free** TB treatment all GOK facilities, FBOs and selected private facilities
- Treatment is for period of six months
- Drugs are **safe to use** during breastfeeding

30

### TB Health education

- Family planning
  - Dual FP method – where hormonal contraceptives is use the add barrier method.
  - If condoms is not the method of choice ,counsel on other FP method e.g. IUCD
- Balance diet locally available sources

31

### When to start ART in HIV/TB co-infection PNC

#### CD4 Count not available

- Start anti-TB treatment
- Start ART in the continuation phase

Rule out pregnancy

#### CD4 Less than 100/MM3

- Start ant-TB treatment
- Start ART as soon as possible

#### CD4 Count 100-350mm3

- Start anti-TB treatment
- Start ART in the continuation phase

#### CD4 count >350 mm3

- Treat TB
- Defer ART and follow up the patient

34

### TB Health education

- Patients will be required to swallow TB drugs under supervision of health care worker or Treatment supporter(friend or relative).
- The treatment supporter should report to the health worker on DOT
- Explain to the patient that once treatment is started TB symptoms disappear quickly but the drug must be continued daily for six months
- Failure to comply risks recurrence of TB and likelihood drug resistance

32

### TB /HIV co-infection cont..

In HIV co-infected mothers

- Give cotrimozale (CPT) 960 mgs OD
- Monitor for skin rushes and Gastro-intestinal disturbances
- Explain that CPT is life long
- Refer to Comprehensive Care Clinic (CCC)

35

### TB and ARV

- ARV and TB drugs can be used together
- **BUT** priority should always be given to TB treatment in the co-infected mothers

33

### TB and the new born

In HIV negative mothers

- If the woman is diagnosed with PTB all children under 5 should be screened for evidence of active TB
- Those found with TB should be put on treatment
- Children <5 years without TB disease should be put on Isoniazid 5mg/kg daily for 6 months
- If TB disease develop during the six months period Stop isoniazid and switch anti-TB treatment (See National TB guidelines)

36

### TB and newborn

- If you suspect TB in the newborn do a Mantoux test
- If the Mantoux test is reactive (>5mm) after 3 months on Isoniazid, then Isoniazid should be continued for another 3 months
- If a mother has TB and has started treatment 2 months or more before the due date, she should have 2 sputum smear tests done before the birth.
- If she is sputum smear negative just before delivery then she is non-infectious and the infant does not need prophylaxis and BCG is given at birth

37

### TB/HIV and immunization for the baby

- Like other children, HIV-exposed children should receive all routine childhood immunizations, according to the national immunization schedule
- HIV-infected children should receive all routine non-live-viral immunizations

40

### TB/HIV infected Babies

- Up to 75 percent of HIV-infected infants develop symptoms in their first two years of life
- Co-infection with HIV and TB is common in children
- HIV-infected children are more likely to experience progressive primary TB disease and the more severe forms of extra-pulmonary disease, such as meningitis
- TB in HIV-infected children is more difficult to diagnose
- Micronutrient deficiencies are common in HIV-infected and HIV-exposed children

38

### TB and breastfeeding

- Encourage the mother to continue breast feeding
- Breast feeding women on INH should also include diet rich in Vitamin B6
- If HIV + explore other feeding options and discuss with the mother according to the young infant and Child feeding (IYCF) guidelines -AFFASS
- Monitor the babies growth

41

### TB/HIV co-infection in the children

- According to the National Leprosy and TB Programme, children account for about 11 percent of new TB infections per year
- If the newborn is HIV exposed give SDNVP and Co-trimoxazole prophylaxis
- Ensure early and regular clinical assessment for TB
- If TB is evident (in children failure to thrive is the most common suggestive sign associated with TB)
- TB treatment is recommended for child weighing < than 10kg:
  - Rifampicin 60 mg + Isoniazid 30mg + Pyrazinamide 150 mgs (RHZ) **OR**
  - Rifampicin 60 mg + Isoniazid 30mg (RH)
- If HIV and below 3 years or weighs < than 10kg give AZT+3TC+ABC
- Provide counseling and support to the mother
- Admit children with severe cases of TB

39

### Nutritional support for TB postnatal mother

- TB is usually associated with poverty hence rule out malnutrition and closely monitor
- Provide nutritional education counseling
- Where available enroll on patient therapeutic feeding program in case of moderate and severe malnutrition
- Provide de-worming regularly
- Give Vitamin A
- Provide micro-nutrient supplementation

42

## Annex II: Monthly monitoring data

### TUBERCULOSIS SCREENING AND TREATMENT WITHIN POSTNATAL CARE SERVICES

Name of Health Facility ..... Reporting: Month..... Year.....

1. SERVICES OFFERED WITHIN THE PNC SETTING FOR THE MOTHER		< 48 Hrs	Within 2 Wks	Within 4-6 Wks	Within 4-6 months	Total
	No. of <b>PNC clients</b> seen during the month					
	No. of <b>PNC clients</b> counseled for HIV					
	No. of <b>PNC clients</b> tested for HIV					
	No. of HIV positive <b>PNC clients</b>					
	No. of HIV positive <b>PNC clients</b> on clotrimazole					
	No. of HIV positive <b>PNC clients</b> on ARVs					
	No. of <b>PNC clients</b> treated for STIs/RTIs					
	No. of PNC clients screened for cervical cancer for (VIA /VILI) at 6 weeks					
2. SCREENING FOR TB WITHIN PNC SETTING		< 48 Hrs	Within 2 Wks	Within 4-6 Wks	Within 4-6 months	Total
	No. of PNC clients screened for TB during this month					
	No. of PNC clients suspected to have TB during this month					
	No. of PNC clients sent for sputum for AFB test during this month					
	No. of PNC clients diagnosed with TB during this month					
	No. of PNC clients initiated on TB treatment during this month					
	No. of PNC clients with TB who have completed TB treatment during this month					
	No. of PNC clients with TB diagnosed with HIV during this month					
	No. of PNC clients with TB cured during this month					
	No. of TB exposed babies on TB prophylaxis during this month					
	No. of TB exposed babies given BCG vaccine during this month					
	No. of TB exposed babies diagnosed with TB during this month					
	No. of TB exposed babies stated on TB treatment during this month					
	No. of HIV exposed babies on ARVs prophylaxis VT prophylaxis					
	No. of HIV exposed babies tested for HIV					
	No. of HIV exposed babies HIV+(Positive)					
	No. of HIV exposed babies HIV- (negative)					

<b>3. FP SERVICES OFFERED TO THE PNC CLIENTS</b>		<b>Within 48 Hrs</b>	<b>Within 2 Wks</b>	<b>Within 4-6 Wks</b>	<b>Within 4–6 months</b>	<b>Total</b>
	No. of <b>PNC</b> clients who on LAM as method of FP during this month					
	No. of <b>PNC</b> clients who received POPs during this month					
	No. of <b>PNC</b> clients who received COC during this month					
	No. of <b>PNC</b> clients who received Injectables during this month					
	No. of <b>PNC</b> clients who received IUCD during this month					
	No. of <b>PNC</b> clients who received Implants during this month					
	No. of <b>PNC</b> clients who received Condoms during this month					
	No. of <b>PNC</b> clients who received BTL during this month					
<b>4. PNC CLIENTS MANAGED FOR COMPLICATIONS</b>		<b>&lt; 48 Hrs</b>	<b>Within 2 Wks</b>	<b>Within 4-6 Wks</b>	<b>Within 4–6 months</b>	<b>Total</b>
	No. of <b>PNC</b> clients managed PPH					
	No. of <b>PNC</b> clients managed for sepsis					
	No. of <b>PNC</b> clients managed for eclampsia					
	No. of <b>PNC</b> clients managed for mood swings					

**\*\*Note: Postnatal data can be obtained from the following units/department MCH/FP, OPD and Maternity**

## Annex III: TB screening job aid



# Screening for TB in pregnancy

**Ask every pregnant woman at every ANC visit the following questions:**

1. Have you had a persistent cough for more than two weeks?
2. Have you experienced excessive sweating or fever at night?
3. Have you lost any weight?
4. Do you have any chest pain?
5. Have you been in contact with anyone who has TB?
6. Do you have any swollen glands?

*(This response can be confirmed during the physical examination of the pregnant woman)*



## Annex IV: Components of targeted postnatal care

Schedule of four targeted postnatal visits		
<i>Always give an appointment for next visit the sooner the appoint the better</i>		
Minimum package for all the visit	<p><b>Mother</b></p> <p>Take the woman's</p> <ul style="list-style-type: none"> <li>• blood pressure</li> <li>• Temperature</li> </ul> <p>Check for pallor Provide Haematinics Provide PITC and HIV prophylaxis Counsel on:</p> <ul style="list-style-type: none"> <li>• Dangers signs</li> <li>• Healthy timing and spacing of pregnancies</li> <li>• Maternal nutrition</li> <li>• Breast care</li> <li>• Personal hygiene</li> </ul> <p>Provide linkage for HIV care and treatment</p>	<p><b>Baby</b></p> <p>Take the baby's</p> <ul style="list-style-type: none"> <li>• Temperature</li> <li>• Count respirations</li> </ul> <p>Keep the baby warm/temperature control Detect and manage danger signs Counsel care giver on:</p> <ul style="list-style-type: none"> <li>• Hand washing</li> </ul> <p>Encourage exclusive breast feeding Provide HIV prophylaxis</p>
First visit Pre-discharge (or within 48 hours if delivered at home)	<p>Provide Vitamin A</p> <p>Check for excessive bleeding</p> <p>Screen for TB</p>	<p>Initiate breast feeding within one hour of birth</p> <p>Neonatal resuscitation</p> <p>Provide immunization</p>
Second visit Within 1- 2 weeks in MCH clinic	<p>Check for lochia loss</p> <p>Check for involution of the uterus</p> <p>Screen for TB</p>	<p>Check immunization status</p>
Third Visit Four to Six weeks at MCH clinic	<p>Provide Family Planning</p> <p>Provide PITC</p> <p>Screen for TB</p>	<p>Growth monitoring</p> <p>Early Infant HIV Diagnosis</p> <p>Provide immunization</p>
Fourth visit Four 4 to 6 months	<p>Provide Family Planning</p> <p>Provide PITC</p> <p>Screen for TB</p>	<p>Provide immunization</p> <p>Complementary feeding</p>



*For more information, contact:*

Project Director  
APHIA II OR Project in Kenya  
Population Council  
General Accident Insurance House  
Ralph Bunche Road  
P.O. Box 17643 00500  
Nairobi, Kenya  
Tel: 254 20 271 3480 - 3  
Fax: 254 20 271 3479  
[www.popcouncil.org](http://www.popcouncil.org)

