MCHIP Nepal End-of-Project Report

January 2010–June 2014

Submitted on:
August 14, 2014

Submitted to:
United States Agency for International Development
Under Cooperative Agreement # GHS-A-00-08-00002-00

Submitted by:
Jhpiego

The Maternal and Child Health Integrated Program (MCHIP) is the USAID Bureau for Global Health's flagship maternal, neonatal and child health (MNCH) program. MCHIP supports programming in maternal, newborn and child health, immunization, family planning, malaria, nutrition, and HIV/AIDS, and strongly encourages opportunities for integration. Cross-cutting technical areas include water sanitation, hygiene, urban health and health systems strengthening.

This report was made possible by the generous support of the American people through the United States Agency for International Development (USAID), under the terms of the Leader with Associates Cooperative Agreement GHS-A-00-08-00002-00. The contents are the responsibility of the Maternal and Child Health Integrated Program (MCHIP) and do not necessarily reflect the views of USAID or the United States Government.

Country Summary: Nepal

Health worker provides counseling and calcium bottle to pregnant women in the health facility

Photo credit: Jona Bhattarai

Selected Health and Demographic Data for Nepal	
GDP per capita (USD)*	732.54
Total Population **	26,494,504
Maternal Mortality Ratio ***	229
Antenatal care, 4+ visits ****	50%
Neonatal mortality rate (deaths/1,000 live births) ****	33
Infant mortality rate (deaths/1,000 live births) ****	46
Under-five mortality (deaths per 1,000 live births) ****	54
Treatment for acute respiratory infection ****	50
Oral rehydration therapy for treatment of diarrhea ****	39
Diphtheria-pertussis-tetanus vaccine coverage (3 doses) ****	87%
Modern contraceptive prevalence rate ****	43%
Total Fertility Rate ****	2.6

Source:
* The Himalayan. Daily Newspaper. April 29, 2014
** Central Bureau of Statistics (CBS). 2012
*** Nepal Maternal Mortality and Morbidity Study 2008/09,
**** Nepal Demographic and Health Survey 2011 (NDHS)
***** WHO Nepal Country Health Profile

Major Activities by Program

- MCHIP in Nepal has largely worked at the national level functioning as a coordinating body with the central-level Ministry of Health and Population. The work at the district level focused at the Dailekh district (one of the 75 districts) in the Midwestern Region of Nepal for distribution of calcium pilot and Morang district in eastern Nepal for proteinuria pilot.

Program Dates	January 2010–June 2014					
Total Mission Funding	$741,761					
Total General Funding	$100,000					
Total Core Funding	$100,000					
Geographic Coverage	**No. (%) of region/provinces**	3/5	**No. of districts**	4/75	**No. of facilities**	65
MCHIP In-Country Contacts	Kusum Thapa, Regional Technical Advisor (kusum.thapa@jhpiego.org)					
HQ Managers and Technical Advisors	Dr. Nabeel Akram: nabeel.akram@jhpiego.org; Presha Rajbhandari: presha.rajbhandari@jhpiego.org; Barbara Rawlins: barbara.rawlins@jhpiego.org; Dr. Jeffrey Smith: jeffrey.smith@jhpiego.org; Katherine Lilly: katherine.lilly@jhpiego.org					

Table of Contents

List of Tables and Figures

Acronyms and Abbreviations

ANC	Antenatal Care
BCC	Behavior Change Communication
CB-NCP	Community Based Newborn Care Package
DHO	District Health Office
DoHS	Department of Health Services
EDP	External Development Partner
ENC	Essential Newborn Care
FCHV	Female Community Health Volunteers
FHD	Family Health Division
FP	Family Planning
GoN	Government of Nepal
H4L	Health for Life
LMIS	Logistics Management Information System
MCHIP	Maternal and Child Health Integrated Program
MNCH	Maternal, Neonatal, and Child Health
MNH	Maternal and Newborn Health
MoHP	Ministry of Health and Population
NESOG	Nepal Society of Obstetricians and Gynecologists
NFHP II	Nepal Family Health Program II
NGO	Nongovernmental Organization
NHRC	Nepal Health Research Council
NHTC	National Health Training Center
PE/E	Pre-Eclampsia/Eclampsia
PHC	Primary Health Care
PNC	Postnatal Care
PMWH	Paropakar Maternity and Women's Hospital
PPH	Postpartum Hemorrhage
RDW	Recently Delivered Women
SBA	Skilled Birth Attendant
TAG	Technical Advisory Group
USG	United States Government
TSV	Technical Support Visits
VDC	Village Development Committee
WHO	World Health Organization

Acknowledgments

Partner organizations for this project were the Government of Nepal (GoN) Family Health Division (FHD), Nepal Family Health Program (NFHP) II, UNICEF, Child Health Division, Logistics Management Division, National Health Education, Information and Communication Center, National Health Training Center (NHTC), Plan Nepal, Johns Hopkins University School of Biomedical Engineering, Paropakar Maternity and Women's Hospital (PMWH), HealthRight International (HRI), Care Nepal, other USAID-funded programs, Ghar Ghar Ma Swastha, and the Nepal Society of Obstetricians and Gynecologists (NESOG).

The program staff and their years of service under the Maternal and Child Health Integrated Program (MCHIP) are listed below:

PROGRAM STAFF AND TITLES	YEARS OF SERVICE
Dr. Kusum Thapa, ANE Regional Technical Advisor	1 January 2012– 30 June 2014
Dr. Rajendra Bhadra, Technical Advisor	1 January 2010–1 July 2013
Chandra Rai, Country Director	1 October 2013–30 June 2014
Stephanie Suhowatsdy, Program Manager	1 January 2010–30 June 2013
Geeta Sharma, Program Officer	1 January 2010- 31 Dec 2011
Pravina Pandey, Program Assistant	16 Oct 2008-28 Feb 2011
Tharendra Pd. Bajgain, Fin/Adm. Officer	1 Jan 2010-9 May 2011
Jona Bhattarai, Program Officer	8 August 2011–30 June 2014
Dipendra Kumar Rai, District Field Officer	1 June 2012–8 September 2013
Dal Bahadur Dangi, District Assistant Field Officer	1 June 2012–30 September 2013
Yeshoda Aryal, MER Officer	10 July 2012 – 30 June 2014
Yamuna Sharma, Fin/Adm. Officer	30 May 2011-22 Oct 2013
Sanjay Pokharel, Finance and Admin Manager	2 September 2013–30 June 2014
Sanad Shakya, Finance Officer	2 September 2013–30 June 2014

Jhpiego's own funds were used to purchase calcium tablets and also for consultant hiring. Hence MCHIP acknowledges the contribution made by Jhpiego for successful completion of the pilot.

Executive Summary

Nepal is one of the few countries that are poised to meet Millennium Development Goals by 2015. Improvement in maternal health has been accompanied by a reduction in maternal mortality, decline in the total fertility rate, and an increase in skilled birth attendant (SBA) rate. Despite these improvements, significant challenges remain. Postpartum hemorrhage (PPH) was once the leading cause of maternal mortality but it has been reduced greatly. Current evidence reveals PE/E as a leading cause of maternal mortality when the antepartum and postpartum hemorrhage are disaggregated. Despite political challenges in the past decade, Nepal has implemented numerous innovative interventions such as community-based distribution of misoprostol for prevention of PPH and application of chlorhexidine for umbilical cord care to prevent newborn sepsis. The scale-up of these innovations as well as the provision of traditional maternal and newborn health (MNH) services at the facility and the community levels needs to be uniform in all 75 districts. The Ministry of Health and Population (MoHP) in Nepal is making a greater effort to pilot innovative interventions, it is crucial to strengthen its capacity and that of government research agencies on research and data for decision-making. Finally, monitoring the scale-up of new programs is essential to ensure their quality as well as their impact on the provision of existing MNH services.

With these gaps in mind, the Maternal and Child Health Integrated Program (MCHIP), in collaboration with the MoHP, designed objectives and interventions to address PE/E and to move toward a common framework for providing uniform and universal access to MNH services in Nepal. A key component is government capacity-building on research and use of data for decision-making. The MCHIP interventions are shown in Table 1.

Table 1. MCHIP Interventions in Nepal

Provide technical and financial assistance for the calcium supplementation for prevention of PE/E.
Provide technical and financial assistance for proteinuria test pilots.
Support implementing partners for advocacy, evaluation, documentation, and dissemination of evidence-based maternal, neonatal, and child health (MNCH)/family planning (FP) interventions at the national level.
Support capacity-building to institutionalize research for decision-making to improve health outcomes

The major accomplishments of the country program by interventions are:

Provide technical and financial assistance for the calcium supplementation for prevention of PE/E: PE/E is one of the leading causes of maternal mortality in Nepal and globally. The World Health Organization (WHO) recommends calcium supplementation for pregnant women in low-resource settings to prevent PE/E. MCHIP conducted a pilot to assess the acceptability of two forms of calcium (tablet and powder) in two village development committees (VDCs) of Banke district. Another pilot was conducted to assess the coverage and compliance of antenatal calcium distribution to prevent PE/E in Dailekh district in Nepal. Although global evidence exists to show that calcium supplementation during pregnancy reduces the incidence of PE/E, this pilot is the first of its kind to test the integration of antenatal calcium distribution into the existing health system to prevent PE/E.

Pregnant women received calcium tablet from health facility.
Photo credit: Dipendra Rai

Through the pilot, MCHIP reduced the risk of PE/E incidence in 9,246 pregnant women who received calcium and counseling from health workers and female community health volunteers (FCHVs) on the benefits of taking calcium. The findings from the pilot show that the antenatal care (ANC) supplementation of calcium is feasible with high coverage and compliance. The ANC providers and FCHVs reported that calcium distribution is acceptable and feasible to incorporate into their current responsibilities. The findings from the survey of the sample of women who received calcium are summarized in Table 2.

The health care workers and FHCVs gave positive feedback on their willingness to distribute and promote the distribution of calcium for the prevention of PE/E. One provider said: "PE/E has been controlled, and because of calcium program, ANC checkup has become regular among pregnant women in their health facilities."

Table 2. Findings from the Calcium Pilot

Coverage of calcium among pregnant women	High, 95.0% (1,178/1,240) of all women surveyed received calcium.
Compliance among women who received calcium	High, 67.0% (789/1,178) of women who received calcium taking the full course (150 days).
Level of knowledge among ANC providers and FCHVs on calcium for prevention of PE/E	High. Among ANC workers more than 94% (102 /109) reported that calcium prevents PE/E and more than 97% (105/109) demonstrated correct knowledge about calcium intake.
Iron consumption	Did not reduce iron absorption. Of the RDW who received both calcium and iron tablets (n=1,157), 99.8% (n=1,155) reported taking them at separate times of the day, as instructed

Sunita Adhikari is one of the 9,426 pregnant women in Dailekh who received calcium to prevent PE/E. Sunita attended ANC regularly during her third pregnancy. The local FCHV told her that the local health clinic was now giving out calcium for free to all pregnant women. The next day, she went to the clinic. There, health workers did a thorough checkup (including testing her urine and measuring blood pressure), counseled her on calcium, and gave her a bag containing two bottles of calcium and an information brochure. When she met a MCHIP staff person later in her pregnancy, she shared, "I already finished one bottle and started the second bottle and I am feeling better. I have recovered from the weakness which I was experiencing."

Through this intervention, MCHIP has demonstrated that ANC distribution is feasible and can maximize coverage, thus reducing the risk of PE/E and ultimately saving lives of women and newborns. As a next step in Nepal, MCHIP recommends the scale-up of calcium distribution in the country. Leadership from the MoHP is essential for the scale-up, which should integrate the training, supervision, and procurement of calcium into the existing government system. MCHIP's contribution toward the prevention of PE/E is valuable not only for Nepal, but also globally. The resources developed, such as the training and counseling materials and brochures, can be adapted for use in other countries. Looking at the encouraging results, the GON is committed to scaling up the calcium supplementation starting in two terai districts.

Provide technical and financial assistance for proteinuria test pilots:
Jhpiego, in collaboration with the Johns Hopkins Whiting School of Engineering, developed a simple, low-cost point-of-care test to detect elevated protein in urine. Protein in urine is one of the symptoms of PE/E, which is one of the leading causes of maternal death in Nepal and globally. In resource-poor settings such as Nepal, many women are often not tested during

pregnancy for elevated proteinuria because they are not able to make it to a health facility. Our new screening test for proteinuria was designed to be prepared by the existing Female Community Health volunteer (FCHV) handles the pen, prepares the test paper, and distributes the test paper to the pregnant woman, who then uses the self-test at home. The low cost point-of-care test that diagnoses PE/E can save the lives of mothers and newborns if appropriate care is received in a timely manner.

A three-phase pilot project was designed to test the diagnostic tool. This component of the project was cost shared with other United States government (USG) and non-USG funding sources. Findings from or the individual steps are shown in Table 3.

Table 3. Findings from the Three-Phase Pilot for the PE/E Low-Cost Point-of-Care Test

Step 1	Johns Hopkins University laboratory	Formulation of the proteinuria agent and the delivery platform of the proteinuria agent were finalized.
Step 2	Routine ANC clinic in Nepal	Sensitivity, specificity, positive predictive value and the negative predictive value of the new protein test were identified against the standard dipstick urinalysis and the Esbach test.
Step 3	Rural ANC clinic in Nepal	Conducted to determine the acceptability of self-test and the majority found the test to be acceptable.
Step 4	Rural ANC clinics and community in Nepal	It was conducted to determine the acceptability and feasibility of PW in the community to perform proteinuria screening self-test and to interpret the color of the test. Unacceptably high positive rate on the screening was encountered: Overall, 388 pregnant women were recruited by 27 FCHVs and carried out the self-test. The percent positive on the self-test as determined by pregnant woman and FCHV during the FCHV visit to the women's homes was 68% (262/388). All positive women were referred to the primary health care center (PHC) by FCHVs, of these 58% (152/262), arrived at the PHC. Of the women who arrived at the PHC for further testing only 10% (14 women) were confirmed with elevated protein. Hence, the further enrollment was suspended.

In conclusion, given the high positive rate identified in Step 4, the decision was made to discontinue the study. During the course of implementing Step 4, it was observed that the community study was well-received by local health authorities, the facility in-charge, and the FCHVs. Women in the community were also enthusiastic about the ability to self-test for proteinuria. Pregnant women performed the self-test after they received orientation and education from the FCHVs. The existing FCHV program platform in Nepal was highly effective at reaching hundreds of pregnant women in a short amount of time (1-7 Nov 2011).

The initial tests on the self-diagnostic model for PE/E provided valuable information to re-design and refine the product further. The recommended next step is to redesign the test to correct the high positive rate. In the meantime, strengthening the recommended PE/E detection practices, such as blood pressure measurement and dipstick urine tests at health facilities during ANC visits is important. To date, prevention, diagnosis, and management interventions in Nepal were implemented separately, either in different geographic locations or during different time periods. As a next step, MCHIP recommends that a combined PE/E prevention, diagnosis, and management intervention be piloted in a few sites in Nepal and the government is planning to pilot in two districts in the terai region where the incidence of PE/E is high.

Support implementing partners for advocacy, evaluation, documentation, and dissemination of evidence-based MNCH/FP interventions at the national level. MCHIP provided technical assistance to HealthRight International (HRI), a child survival grant recipient to implement the quality improvement process for maternal and newborn health services in health facilities of Argakanchi district in summer 2011.

The MoHP was interested in developing a core set of prioritized community-focused MNCH interventions in a package that can be scaled up by mobilizing FCHVs. Hence MCHIP supported NFHP and other local and international experts and stakeholders, to assist the MoHP in defining integration and to develop various tools to guide integration.

Table 4: Products Developed with assistance from MCHIP for Community-Focused MNCH Interventions Package for Scale-Up

A common framework for MNH in Nepal	The framework provides a common way of thinking and talking about various MNH interventions, showing how all the pieces should relate to each other and guiding the MoHP and the stakeholders in planning and management. The framework is governed by the principle of highest coverage for interventions directly leading to improved health outcomes with a flexible strategy for implementation.
Concept note on the evolution of an integrated training program for community-based MNCH interventions	The concept note presents a framework for addressing trainings for a variety of interventions for community-based approaches in a streamlined manner. The conceptual framework would: allow the government and partners to fill in the gaps by completing core training for all currently approved interventions; reorganize training guidelines and materials to remove redundancy and establish a continuum of care approach; include a modular approach that allows introduction of new interventions as evidence establishes their value; and simplify the work of FCHVs by organizing activities around client needs.

The Community Based Newborn Care Package (CB-NCP) was developed by Saving Newborn Lives/Save the Children under the leadership of the Child Health Division and Family Health Division (FHD) of the MoHP to address the high and stagnant rates of newborn mortality. CB-NCP was initially piloted in 10 districts and rapidly scaled up. Currently it is in 41 districts. MCHIP facilitated the assessment in 10 initial pilot districts. MCHIP provided technical input during CB-NCP assessment design, finalization and printing the report. Findings from the CB-NCP assessment provided valuable information on the strength and weakness of the CB-NCP program. MCHIP organized meetings with MoHP officials, USAID and a small group of external development partners and stakeholders. Subsequently the CB-NCP package was revised and some content was changed. MCHIP printed 300 copies of the assessment report and shared it with the Child Health Division Department of Health Services (DoHS), MoHP.

The development of a common framework for MNH and evaluation of interventions are all important steps toward building the capacity of the MoHP to streamline MNH service delivery. MCHIP supported to initiate discussions on a common framework for MNH and provided products to facilitate these discussions, but this is just the beginning. A significant amount of leadership, commitment, and work is required from all stakeholders to develop a common pathway toward provision of rationalized and integrated MNH services. The quality of these interventions, as well as their impact on routine MNH services, should be assessed periodically. With the CB-NCP evaluation, MCHIP has helped establish precedence for the MoHP and other agencies to take the lead in reviewing and evaluating new interventions that are piloted and

subsequently scaled up. The MoHP and stakeholders now need to ensure that feedback is absorbed by the program.

Support capacity-building to institutionalize research for decision-making to improve health outcomes.
The MoHP aims to increase the capacity of local institutions in Nepal on qualitative and quantitative research design and use of MNCH/ FP data at the national level. Nepal Health Research Council (NHRC) is a government body responsible for setting the agenda for research, conducting research, giving ethical approval, and monitoring other research being done in country. MCHIP helped identify ways to strengthen the capacity of the NHRC as a research regulating body.

Under this objective, MCHIP facilitated a workshop on "Evidence Based Policy and Programming in Public Health in Nepal" in September 2011 led by NHRC with MCHIP/USAID support. The workshop identified a set of priorities for evidence-based policy and program in public health. In order to follow up the recommendations and action points, NHRC with support from MCHIP/USAID organized a follow on meeting on 16th June 2014 at NHRC. All members in the meeting agreed that the initiative taken by the MCHIP was a very useful platform. Health for life and other concerned stakeholders will continue the initiative started by MCHIP.

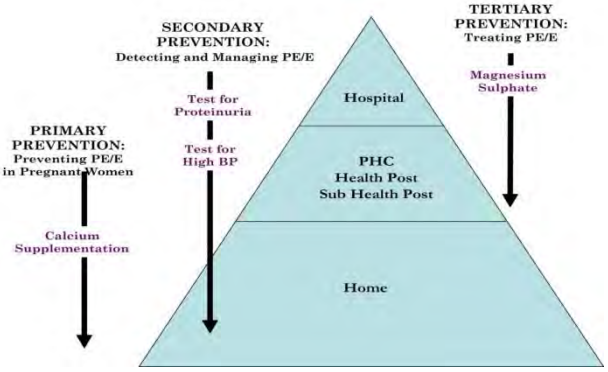
Introduction

Nepal is a landlocked Asian country with a diverse landscape and topographical barriers that make service delivery to remote areas difficult. Despite geographic challenges and a decade of political instability, Nepal has achieved remarkable improvements in health and is one of the few countries on track to achieve the Millennium Developments Goals by 2015. The maternal mortality ratio decreased significantly, the total fertility rate decreased and the use of skilled birth attendants (SBAs) tripled (although it remains low at 36%). Although progress has been made, challenges remain. For example, 63% of births in Nepal still take place at home, most of them without an SBA.

The Maternal and Child Health Integrated Program (MCHIP) in Nepal contributes toward MoHP's effort to identify, prioritize, and address the leading causes of maternal and newborn mortality with low-cost, low-resource interventions that can be taken to scale. Prior to MCHIP, Maternal and Neonatal Health Program (MNH), 1999-2004 worked to standardize the training and skills of different cadre of health workers and physicians, improve community preparedness for deliveries and emergencies through the BPP, and raise awareness through the SUMATA campaign. The MNH program supported training and development of four Nepali gynecologists as regional technical experts. ACCESS (2004-2007), the predecessor of MCHIP, engaged the MoHP and the stakeholders in Nepal to develop SBA training materials, to develop national guidelines and community level activities for LBW newborns and provided technical assistance for misoprostol distribution program and to conduct maternal mortality and morbidity study, and promoted the use of magnesium sulphate in the management of PE/E in 22 health facilities across 12 districts, led by NESOG. The accomplishments of ACCESS through capacity-building of private sector providers to manage PE/E opened the door for MCHIP in Nepal. PE/E contributes to 12% of maternal deaths (more than 60,000 deaths annually) worldwide[1]. In Nepal, recent evidence indicates PE/E is now the second leading cause of maternal death, accounting for 21% of all maternal deaths[2]. MCHIP Nepal is supporting the MoHP's three-prong strategy for reducing maternal mortality and morbidity caused by PE/E (See Figure 1).

- **PE/E prevention:** The World Health Organization has identified calcium as one of the most effective and low-cost interventions for prevention of PE/E in a calcium-deficient setting such as Nepal. Atallah et al. found that calcium supplementation during pregnancy reduced the incidence of PE/E by 67%[3]. In Nepal, calcium supplementation is prescribed in most of the larger hospitals but not routinely available to all pregnant women through public antenatal care (ANC) clinics.

Figure 1. MOHP Three-Prong PE/E Prevention, Detection, and Management Strategy



- **Screening and diagnosis of PE/E:** Neither of these is a routine part of ANC in most developing countries, including Nepal. The challenge in Nepal is that 15% of women still does not receive any ANC and only 50% of pregnant women attend the recommended minimum of four visits. ANC clinics, especially at

[1] World Health Organization (WHO). 1994. *Mother-Baby Package: Implementing Safe Motherhood in Countries*. Geneva.
[2] Family Health Division, Ministry of Health. Nepal. 2008. *Maternal Mortality and Morbidity Study* (preliminary findings).
[3] Atallah AN, Hofmeyr GJ, Duley L. 2006. Calcium supplementation during pregnancy for preventing hypertensive disorders and related problems (Cochrane Review). In: *The Reproductive Health Library*, Issue 9.

health posts and sub-health posts, rarely have the capacity to screen for proteinuria, an important indicator of PE/E.

- PE/E management/treatment: WHO has identified magnesium sulfate as the best evidence-based practice to treat PE/E. Although magnesium sulfate is included in the National Medical Standards Volume III and the Essential Drugs List, it is not yet systematically provided through the health care system to all women who require this life-saving care. The MCHIP program builds on the achievements from the 2009 ACCESS Program that promoted magnesium sulfate for treatment in 22 health care facilities through capacity-building of the Nepal Society for Obstetricians and Gynecologists (NESOG).

The goal of MCHIP in Nepal is reductions in under-five and maternal mortality and morbidity through innovative, effective, and scalable community-oriented strategies that deliver integrated high-impact interventions to vulnerable populations designed, implemented, and evaluated by private voluntary organizations/nongovernmental organizations (NGOs). The specific objectives with their interventions and coverage are listed below. Objectives 1 and 2 received supplemental funding from various United States government (USG) and non-USG sources.

Objective 1: Provide technical and financial assistance for calcium supplementation for prevention of PE/E. MCHIP and Nepal Family Health Program II (NFHP II) supported the MoHP to pilot PE/E prevention program for calcium supplementation for pregnant women in the Dailekh district in Midwestern Nepal. PE/E prevention interventions were 1) training of health workers to provide counseling, distribute calcium during the first ANC visit, and screening for PE/E; 2) promote daily calcium intake for pregnant women; and 3) female community health volunteers (FCHVs) were trained to promote ANC attendance and compliance with the recommended calcium regimen.

Objective 2: Provide technical and financial assistance for proteinuria test pilots. Jhpiego, in collaboration with the Johns Hopkins Whiting School of Engineering, developed a simple low-cost point-of-care test to detect protein in urine. The pilot for the test was conducted in the Paropakar Maternity and Women's Hospital (PMWH) in Kathmandu and a rural ANC clinic at the Morang district in eastern Nepal. At PMWH, urine specimens were tested by researchers using the new point-of-care tests and the Esbach test. At the ANC clinic in Morang district, all pregnant women were offered the standard urine dipstick test, and, if consent was received, were asked to self-test using the new point-of-care test.

Objective 3: Support implementing partners for advocacy, evaluation, documentation, and dissemination of evidence-based maternal, neonatal, and child health (MNCH)/family planning (FP) interventions at the national level. The planned interventions were to review existing MNCH/FP interventions, develop an integrated framework to address a wider range of health services in an economic and efficient manner, and provide technical assistance to the community-based CB-NCP assessment to strengthen the ongoing CB-NCP programs for integration into the safe motherhood program.

Objective 4: Support capacity-building to institutionalize research for decision-making to improve health outcomes. MoHP aims to increase the capacity of the local institutions in Nepal on qualitative and quantitative research design and use of MNCH/ FP data at the national level. MCHIP supported the MoHP to find ways for strengthening capacity of the NHRC, a government body responsible for setting the agenda for research, conducting research, giving ethical approval, and monitoring other research being done in country.

Goal: Reductions in under-five and maternal mortality and morbidity through innovative, effective, and scalable community-oriented strategies that deliver integrated high-impact interventions to vulnerable populations designed, implemented, and evaluated by private voluntary organizations/NGOs.

Objective 1: Provide technical and financial assistance for the calcium supplementation for prevention of PE/E.

Objective 2: Provide technical and financial assistance for proteinuria test pilots.

Objective 3: Support implementing partners for advocacy, evaluation, documentation, and dissemination of evidence-based MNCH/FP interventions at national level.

Objective 4: Support capacity-building to institutionalize research for decision-making to improve health outcomes.

Major Accomplishments

Objective 1: Provide technical and financial assistance for the calcium supplementation for prevention of PE/E

CALCIUM SUPPLEMENTATION PILOT IN DAILEKH DISTRICT

Background and objective

MCHIP designed a programmatic operations research study, the first of its kind, to examine the results and challenges of integrating antenatal calcium distribution to prevent PE/E into an existing health system outside of a clinical trial. The study was intended to generate information that could inform the MoHP's decision-making process regarding whether to scale up antenatal calcium supplementation to other districts. The primary objectives of this pilot were to assess the coverage and compliance achieved by the antenatal calcium supplementation intervention.

Specific research questions included:

- What proportion of pregnant women attend at least one ANC visit?
- What proportion of pregnant women agree to take calcium offered during ANC services?
- What proportion of pregnant women who receive calcium during ANC take it according to the instructions?
- Do women who take calcium during pregnancy take iron folate as directed?
- What is the level of knowledge and experience with the calcium program intervention among FCHVs and ANC providers?

This pilot study was implemented in Dailekh district, a large hill district in the Bheri zone of Mid-western Region of Nepal. Dailekh was selected by the Family Health Division of the MOHP in consultation with a Technical Advisory Group (TAG) formed to guide the study.

Implementation steps:

Approval was obtained from the Nepal Health Research Council (NHRC) and the Johns Hopkins University institutional review board.

Health workers who provide or supervise ANC (268) and all 810 FCHVs in the district were trained for one day by MoHP and MCHIP staff. After training, ANC providers began to counsel pregnant women and distribute calcium, primarily during the first ANC visits. FCHVs were mobilized to educate pregnant women about calcium supplementation during routine home visits, but did not distribute calcium.

Jhpiego procured a total of 26,500 bottles of calcium, each containing 100 tablets of calcium carbonate USP (1250mg equivalent to 500mg/tablet of elemental calcium). Calcium was purchased first from Missionpharma India (USD 0.01/tablet or Nepali Rupees 0.65/tablet) and then from Curex Pharmaceuticals Nepal (USD 0.016/tablet or Nepali Rupees 1.35/tablet). Both shipments were delivered to the district health office (DHO), entered into the logistics management information system (LMIS) and distributed to health facilities through the government system. Calcium carbonate is not on the national Essential List of Medicines. Procured calcium was packaged in 100-tablet bottles so three bottles was the standard distribution to women attending ANC at fourth month in their pregnancy. MCHIP provided urine test strips and collection bottles to all health facilities to strengthen screening and diagnosis of PE/E. Magnesium sulphate is routinely supplied through the MOHP.

All pregnant women who attended ANC services in Dailekh district were offered calcium supplementation for PE/E prevention for a 14-month period of June 2012 through August 2013. The daily dose of 1 gram (two tablets of 500mg each) and initiation of supplementation around 20 weeks of gestation were based on the trials included in the Cochrane review. Ideal supplementation was designed as two tablets taken once daily in the morning for five months (total 150g). Calcium was distributed based on gestational age at first ANC visit for the entire period of pregnancy.

Although this pilot primarily focused on prevention of PE/E through calcium supplementation, it also addressed the management and detection of PE/E. ANC providers/health workers in the district were trained in the use of magnesium sulfate for treatment of severe PE/E. Health facilities were provided with urine collection bottles and dipsticks to ensure the availability of universal PE/E detection services for pregnant women during ANC at all government health facilities.

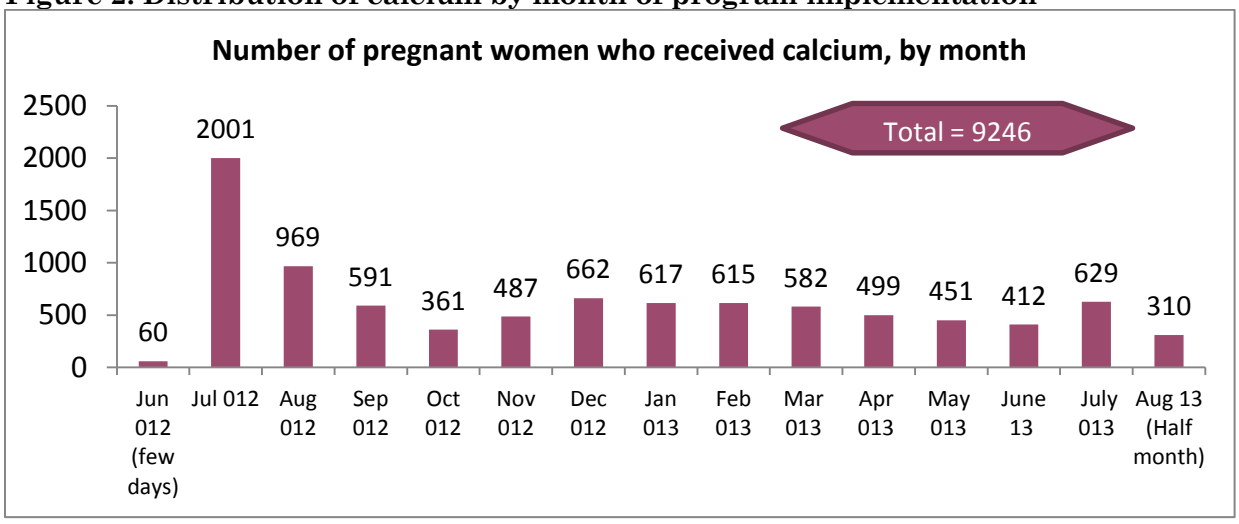
During this period the project had several HQ STTA including Harshad Sanghvi, Barbara Rawlins, Britni Crocker, Jeffery Smith, Steve Hodgins, Catharine McKaig. These individuals met with USAID and other partners.

Calcium distribution and monitoring

A total of 23,210 bottles (2,321,000 tablets) of calcium were distributed to 9,246 pregnant women from half of June 2012 to half of August 2013 (Figure 2).

To facilitate this distribution, MCHIP conducted a series of activities starting from the formation of a technical advisory group (TAG), development of behavior change communication (BCC), training and monitoring and evaluation materials, sensitization and training of local officials, health care providers, and community health workers.

Figure 2: Distribution of calcium by month of program implementation



Monitoring and evaluation (M&E) for this intervention was integrated into the existing health management information system (HMIS). The existing FCHV recording and reporting forms were modified. An additional calcium register was introduced to record distribution by ANC providers. Throughout the pilot, two MCHIP district staff collected monitoring data from health facilities, FCHVs and TSVs and entered into the project database in Epi Info.

The DHO with two MCHIP district-based staff conducted technical support visits (TSVs) to health facilities and FCHVs to monitor implementation reinforce key messages and address data collection issues. After five months, 119 health workers from all facilities participated in a review meeting to refresh PE/E-related knowledge and discuss progress to date. Updates also were provided to the MOHP and the TAG throughout the pilot. Similarly, FHD, USAID and MCHIP centre team made frequent visit to the pilot district to monitor program implementation. MCHIP organized the calcium program district close out meeting was organized in September 2013 in Dailekh, participated by FHD director and program focal persons, DHO staff, MCHIP staff and district stakeholders.

MCHIP regularly updated progress and achievements of the workplan regularly to FHD/DOHS/MOHP, USAID and TAG. Reports were prepared quarterly and submitted to USAID.

Survey

Post-intervention household interviews were conducted in August 2013 with 1240 women who had given birth in the last six months (RDW) to measure ANC coverage, calcium coverage and compliance with the recommended calcium regimen. Independent research agency, PHD group was hired for the survey through the competitive bidding process.

The study did not measure the incidence of PE/E and did not seek to measure the clinical efficacy of calcium supplementation, given that this has already been documented in a recent Cochrane review.

Findings:

- The distribution of calcium through ANC services produced very high coverage of calcium among pregnant women, with 95.0% (1,178/1,240) of all women surveyed receiving calcium.
- The survey revealed that compliance was high, with 67.0% (789/1,178) of women who received calcium taking the full course (150 days) and the vast majority of all women who received calcium reporting that they took it as instructed with respect to dosage, frequency, and timing. Compliance is also analyzed from FCHV record collected through the health facility report to triangulate the survey data, and these two findings correspond with each other full course 67.6% and partial course (Took at least 90 days) 22.7%.
- RDW, FCHVs, and ANC health care providers achieved high levels of knowledge about calcium through this program approach. Among ANC workers more than 94% (102 /109) reported that calcium prevents PE/E and more than 97% (105/109) demonstrated correct knowledge about calcium intake.
- Calcium consumption did not appear to reduce iron consumption, and the majority of women who received calcium and iron followed instructions to take iron and calcium separately. Among the RDW who attended ANC and received calcium, 98.6% (1,156/ 1,173) received both calcium and iron tablets, and all of these women reported taking both tablets. Of the RDW who received both calcium and iron tablets (n=1,157), 99.8% (n=1,155) reported taking them at separate times of the day, as instructed

A FCHV at a pregnant women's group in Dailekh district talks about the risks of PE/E and the use of calcium for prevention of PE/E.

Photo by: Dipendra Rai, MCHIP/Nepal

- Calcium distribution is acceptable to ANC providers and feasible to incorporate into their current responsibilities. FCHVs are willing to incorporate calcium counseling into their work.

For further details on the calcium report, please refer to the process brief, findings brief, cost effectiveness analysis, and findings report on the calcium pilot.

Calcium pilot dissemination meeting

The finding from the calcium study was disseminated through the dissemination meeting organized on December 2013. Dissemination meeting was attended by 74 persons representing the government officials, donor agencies, and other key stakeholders in Nepal. During dissemination meeting, the MCHIP Nepal team received support/STTA from HQ in order to analyze the survey findings, develop summary of calcium pilot, survey findings and presentations. The Director of MCHIP Dr. Koki Agarwal and representative from USAID, Dr. Nahed Matta also attended this meeting.

Dignitaries from MOHP, DOHS, MCHIP and USAID in dissemination meeting
Photo credit: Jona Bhattarai

Initiatives for scale up

The government of Nepal is interested in scaling up the distribution of calcium in Nepal. Jhpiego, in collaboration with the GoN and professional agencies, is pursuing the development of comprehensive program to address all three prongs of PE/E management (i.e., prevention, detection, and treatment).

In order to do this, MCHIP facilitated an Advocacy meeting to discuss on scale-up of calcium supplementation to pregnant woman for prevention of PE/E on March 2014. On this meeting, representatives of MoHP, divisions, PLAN Nepal, Suaahara, Micronutrient Initiatives, WHO, NHRC, USAID, UNICEF, UNFPA, CARE Nepal, HRI, H4L, DFID participated. Dr. Harshad Sanghvi and Barbara Rawlins participated from Jhpiego HQ. Dr. Sanghvi presented the "evidence for going to scale with Calcium supplementation". During the presentation, Dr. Shilu Aryal, FHD shared that FHD has planned to scale up the program in two Terai districts in which PE/E caseload, number of pregnancies and availability of partner agencies are high.

Participants of Advocacy meeting
Photo credit: Jona Bhattarai

To make this scale-up happen, the GON/FHD has requested support from concerned stakeholders. The government has put the calcium program in their annual workplan. PLAN Nepal has planned to support this program in Morang and Parsa districts.

Considering the magnitude of PE/E in Nepal, it is now the number one cause of maternal mortality, MCHIP supported FHD/ DoHS to form a TAG named "PEE TAG" to foresee the PE/E prevention, early detection and management, FHD received the official approval/ Tippani for the PE/E TAG from DoHS on April 2014. The first meeting for TAG was held in Family Health Division on 27 May 2014. TOR of the TAG, membership and its meeting timeline, roles was discussed during the meeting.

Publication plan

Results of the calcium supplementation pilot are planned to be submitted for publication to the BMC Pregnancy and Child Birth Journal. Hence the article write up on "Coverage, compliance, acceptability and Feasibility of a program to prevent pre-eclampsia and eclampsia through calcium supplementation for pregnant women in Nepal" is ongoing. While doing so, MCHIP has conducted three different workshops. During the first workshop, Dr. Harshad Sanghvi and Barbara Rawlins visited Nepal to support the write up. The first workshop was organized on 10-14 March 2014 at Hyatt Regency. The first meeting focused on dividing tasks for the writing. A draft prepared, compiled and second workshop organized 28th -29th April Gokarna Village Resort to discuss on the draft. Third workshop was held on 9th -10th June 2014 at Dhokaima Cafe, Lalitpur to prepare final draft by incorporating comments and feedback.

Cost analysis

As per the request from USAID and concern over the cost of calcium, a brief cost analysis of the calcium supplementation pilot was conducted by Mr. Devi Prasai, a health economist and presented during the calcium dissemination meeting in Dec 2013. USAID, GON and other stakeholders wanted to have further detailed cost analysis of the calcium pilot; hence detailed cost analysis is being done through HQ support. The final report is expected to be available by end of July 2014.

Support for continued calcium supplementation in pilot district

After the calcium supplementation program, FHD requested Jhpiego to support continuing calcium supplementation in Dailekh. Hence, MCHIP supported FHD to coordinate with partner agencies and stakeholders for continued supplementation and CARE Nepal provided calcium for some months. MCHIP supported to transport the calcium purchased by CARE and its related commodities to Dailekh district. After that, Jhpiego purchased calcium tablets, dipsticks, urine bottles and calcium bag for six months and has already handed it over for the period of from July to Dec 2014.

CALCIUM ACCEPTABILITY STUDY

Before the calcium pilot, MCHIP conducted an acceptability study of calcium to test pregnant women's preference for calcium forms (tablets or powder) in two VDCs in Banke district mobilizing FCHVs and health care providers. Of 75 pregnant women, 57 (76%) chose calcium tablet and 12 pregnant women (16%) chose powder. The finding was used to inform the pilot described above. In 2009, the Family Health Division (FHD) with support from external development partners developed a pilot study on community-based calcium supplementation during pregnancy. The Nepal Health Research Council (NHRC) approved the proposal in October 2009. From December 2009–June 2010, the study was conducted in Titiheria and Udaharapur VDCs of Banke district.

Objective of the study

To test the acceptability of calcium in two forms (tablets and powder) among pregnant women for three months in two VDCs of Banke district.

Orientation and implementation

A one–day orientation was organized for all FCHVs (38) from both VDCs in December 2009.

Calcium supplementation started at the end of December 2009. FHCVs received educational materials and an orientation on the benefits of calcium supplementation. As designed, FCHVs in Udaharapur VDC first distributed calcium tablets for one month, while FCHVs in Titiheria VDC gave pregnant women calcium powder. After one month, FCHVs resupplied women with the other form in January 2010. At the end of the second month, women were interviewed about their experiences with both forms of calcium and offered their preferred form (tablet or powder) for the third and final month.

FCHVs taste the calcium powder during the orientation in December 2009
Photo credit: Geeta Sharma

Monitoring and Data collection

For research purposes, Valley Research Group (VaRG) led the study design, implementation and analysis. They collected data after the second month through interviews and again after the third month of supplementation. Semi-structured interviews were conducted with all pregnant women who received calcium, some FCHVs and a few health care providers.

For project monitoring, Technical Support Visits (TSV) were organized in December, January, February and March for providing support during orientation and first supply, switching and preference on calcium powder and calcium tablet. In each TSV, each FCHV was asked whether they faced any difficulties during communication regarding messages on calcium supplement, had there been any problems due to calcium intake, any resistance to taking calcium or any difficulties in switching forms. They were also asked how they communicate with pregnant women for taking calcium to ensure they were communicating consistent messages as detailed in the educational materials. During second TSV stickers were posted on top of CB-MNH register to be circled on third month of calcium supplementation to record the women's preference on tablet or powder. Representative from NHRC also visited to the study site for monitoring.

Young pregnant women discussing their experiences taking calcium during a TSV
Photo credit: Stephanie Suhowatsky

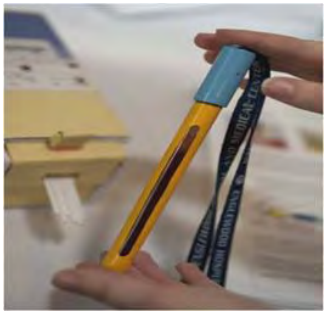
Findings

There were a total of 97 pregnant women (PW) who participated in the study and took calcium. FCHVs supported varying numbers of PW: one to nine pregnant women per FCHV. FCHVs were enthusiastic to supply calcium to pregnant women. 49% of the study participant PW were between the age of 20–24 years, and were from different ethnic groups (Brahmin; Chhetri; Muslim; and Dalits).

- Most of the PW knew that it prevents severe headache, convulsion and fit.
- 99% would recommend calcium to other PW
- 98% would take in future pregnancies
- 90% reported no side effects
- Reported side effects: belching, less appetite and lack of movement of fetus
- About half of PW started taking calcium on the same day prescribed
- >95% PW had taken calcium daily
- About 70% of the women took the full course of 60 days, regardless of which form they took first.
- The most common reason given for not taking the complete course among both users was forgetting to take.

Objective 2: Provide technical and financial assistance for proteinuria test pilots.
To reduce maternal mortality related to PE/E, now the number one cause of maternal mortality in Nepal, a simple, low-cost, non-invasive diagnostic test is needed to be widely available in low-resource and often rural settings of developing countries. In these settings, many women are often not tested during pregnancy for elevated proteinuria because either they are not able to make it to a health facility, or because of the fact that there is an unmet need for BP (14%) and urine testing (44%) [4]in health facility even at antenatal care. The new screening test for proteinuria was designed to be prepared by the FCHV; the FCHV handles the pen, prepares the test paper, and distributes the test paper to the pregnant woman, who then uses the self-test at home. A three-phase pilot project was designed to test the diagnostic test. This component of the project was cost shared with other USG and non-USG funding sources.

Step 1: In Step 1, through various laboratory processes at the Johns Hopkins University laboratory in Baltimore, the formulation of the proteinuria agent and the delivery platform in the pen was finalized.



Step 2: In Step 2, the sensitivity, specificity, positive predictive value, and the negative predictive value of the new protein was identified against the standard dipstick urinalysis and the Esbach test in routine ANC.

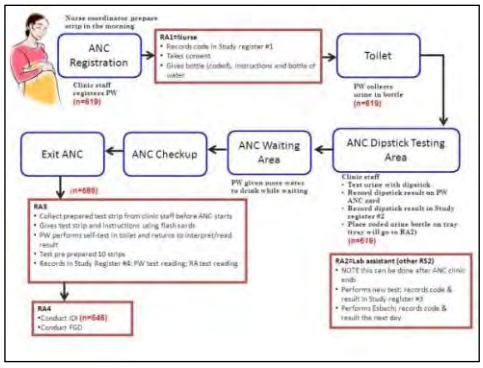
Above: Standard dipstick urinalysis.
Below: Proteinuria pen prototype

All clients attending ANC at the Prashuti Maternity Women's Hospital underwent routine protein testing. Urine specimens from the first 50 pregnant women daily were collected, tested by the clinic staff using dipstick, retested by the study nurse using dipstick, and tested by researchers using the new test and the Esbach test. A total of 600 samples were examined.

The sensitivity, specific, positive predictive value, and the negative predictive value were determined to be adequate and suitable for further field-testing in the community, after a few modifications.

Step 3: Was conducted to determine the acceptability of self-test for proteinuria by Nepali ANC clients.
In partnership with District Health Office, step 3 was conducted at two government health facilities in Morang district (Koshi Zonal Hospital and Mangalbare PHC).

Urine tested with the dipstick as part of routine ANC; the study additionally tested the pregnant women's urine sample using new test and the Esbach test (reagent and Pen). Total pregnant women participating/enrolled (n=619) at both study locations, Mangalbare PHC and Koshi Zonal Hospital (KZH); 546 (88%) completed all phases of the study.



Job aid for nurses showing flow of routine ANC appointment

Note: The Esbach test is the gold standard, Dipstick test is the standard of care (trace or 1+ vs. negative); Point of Care (POC) self-test is new.

[4] NDHS 2011

Results revealed majority (86.1%) of PW found the proteinuria self-test easy or very easy to use; 92.7% were very confident /confident to use the proteinuria self-test again at home, 96.7% were willing to do proteinuria self-test again 4 weeks later at their own home; and 93.2% were very likely/likely to recommend the test to other PW.

Step 4: After the step 3, MCHIP conducted Step 4 with the financial support of DIV. To determine the acceptability and feasibility of pregnant women in the community to perform the proteinuria screening self-test and to interpret the color of their test a) in the presence of the existing FCHVs and b) on their own at home (unassisted) four weeks later.

FCHVs received the training and resources to provide the self-test and counseling to the women in the community. A primary health care (PHC) center that received training with all key providers to ensure that the standard of care for patients with PE/E was in accordance with national guidelines was prepared as a referral site. At the start of the data collection process, when results started coming in, we noticed a high positive rate on the self-test. The high positive rate was approximately 60% to 70% in the beginning. A decision not to continue the study was made. Next steps are further engineering and lab work to reiterate the design of the screening test.

Overall, before the study was suspended, 388 pregnant women were recruited by 27 FCHVs and carried out the self-test, and 68% (262/388) of these women had positive results on the self-test as determined by the pregnant woman and FCHV during the FCHV visit to women's homes. All women with positive results were referred to the PHC by FCHVs, and of these 58% (152/262) arrived at the PHC.

Several factors may explain why the percentage of women testing positive on the self-test and visiting the PHC was not higher: it was harvest time, women may have gone to other health facilities, and because women were not sick, they may not have felt the need to go to the health facility even after strong encouragement.

Of the women who arrived at the health facility for further testing (n=152, 38% were Nil on Dipstick, 53% were Trace, and only 10% (14 women) were confirmed with elevated protein (6% were 1+, 3% were 2+, <1% were 3+). Blood pressure was checked on all the women using the standard auscultatory method. Only one woman who was 3+ on dipstick also had high blood pressure; all others had normal blood pressure. It was believed that blood pressure equipment accuracy was less than ideal.

In conclusion, the community study was well received by local health authorities, the facility in-charges, and the FCHVs. Women in the community were also enthusiastic about the ability to self-test for proteinuria. The existing FCHV program platform was highly effective at reaching hundreds of pregnant women in a short amount of time. Pregnant women performed the self-test once they received orientation and education from the FCHVs. A high positive rate on the screening test was encountered. In the health facility, further diagnostic testing showed that women were mostly "trace" and "nil" on dipstick. Several women with high proteinuria were detected. Once we learned of the high positive rate, we performed investigations in the field for user issues and in the laboratory. The community study was suspended because of the high rate of false positives. Local partners were kept informed about the issues. Currently, our engineers with advisement from external engineers are exploring a number of solutions to the problems encountered with the pens, reagent, and strips.

Objective 3: Support implementing partners for advocacy, evaluation, documentation, and dissemination of evidence-based MNCH/FP interventions at the national level.

MCHIP/Jhpiego has provided technical support to HealthRight International (HRI), to improve the quality of reproductive health services in Arghakhanchi, one of the hilly districts of Nepal since 2010. HRI is conducting operations research in this district through a Child Survival Grant. MCHIP supported HRI to use Maternal and Newborn Care Quality Improvement (MNC-QI) tools to improve the quality of family planning (FP) and maternal and newborn care (MNC) services in eight health facilities: 1 district hospital, 1 primary health center, 4 health posts and 2 sub health posts. The MNC-QI tools are a Ministry of Health and Population resource developed in 2007 with technical assistance from Jhpiego the USAID-funded ACCESS Program. Please find the detailed of the work under case studies section.

MNCH/FP INTEGRATED FRAMEWORK

The MoHP was interested in developing a core set of prioritized community focused MNCH interventions in a package that can be scaled up by mobilizing FCHVs. MCHIP provided assistance to NFHP to assist the MoHP in defining integration and to develop various tools to guide integration. The products developed are described below:

A common framework for maternal and newborn health in Nepal.
In Nepal there are multiple government units working with multiple stakeholders on multiple programs. This complexity can make it difficult to coherently design programs and to ensure that services are consistently delivered in a coordinated and effective way. Furthermore, many of the program initiatives are new and evolving, so the situation is changing quickly. MCHIP developed the framework to provide a common way of thinking and talking about various MNH projects, showing how all the pieces should relate to each other, and to guide the MoHP and the stakeholders in planning and management. The goal of the framework is the implementation of a set of activities and services which – in the experience of beneficiaries – works, in effect, as a single smoothly-functioning, coherent program. The matrix is governed by the principle of highest coverage for interventions directly leading to improved health outcomes with a flexible strategy for implementation. The framework drops the interventions along the following dimensions:

1. *Life cycle stage* – pre-pregnancy; early, mid-, and late pregnancy; intrapartum; early postpartum/neonatal; later postpartum/neonatal; infancy; and late postpartum.
2. *Type of intervention* – assessment/case-management, counseling/health education, dispensing/dosing.
3. *Intervention complexity* – relatively simple interventions vs. interventions that require complex skills or a more robust enabling environment (e.g., lab support, blood bank, surgical theater, cold-chain, etc.).

Concept note on the evolution of an integrated training program for community-based MNCH interventions
Because global study results are not available all at once and because training for implementation takes time, the government has implemented training programs for a variety of interventions sequentially. This has resulted in some overlap as different interventions are combined and in some gaps in training and implementation across the 75 districts. The government is interested in filling these gaps and in ensuring that all proven approaches are included in training for all districts across all MNCH interventions. This presents an implementation challenge, compounded by the different roles for the different divisions within the MoHP. The concept note presents a framework for addressing these implementation

challenges with respect to community-based approaches. The conceptual framework would allow the government and partners to:

1. Fill in the gaps by completing core training for all currently approved interventions;
2. Reorganize (and revise as needed) training guidelines and materials to remove redundancy and establish a continuum of care approach;
3. Include a modular approach that allows introduction of new interventions as evidence establishes their value; and
4. Simplify the work of FCHVs and other community health workers by organizing activities around client needs: during the antenatal period, during the perinatal period, during the postnatal period, and regarding a sick infant.

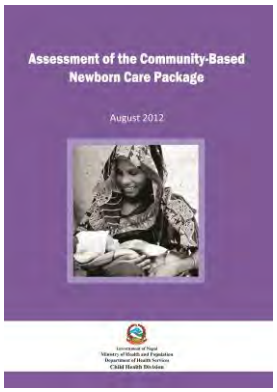
MCHIP participated in the launch of the national MNCH Integration training working group. To contribute to this forum, MCHIP in collaboration with NFHP II developed a conceptual framework on MNCH integration at the national level.

MCHIP supported other advocacy efforts such as: planning to scale up PPH prevention led by the Family Health Division (FHD) and NFHP II; better integration of MNCH and FP in the maternal and newborn care learning resource package for SBAs; and strategic planning around addressing causes of maternal mortality in light of the recent maternal mortality and morbidity study (FHD, 2009).

MCHIP continued to facilitate consensus-building around the various integration frameworks. Renewed discussions were conducted with FHD and the Child Health Division in coordination with NFHP II and Save the Children in spring 2012 on the continuum of care and the need for integration of services and trainings, as well as on the implications on the health management information systems, logistics, etc. This activity has contributed to further dialogue and joint activities on community-based initiatives, such as the CB-NCP assessment. In August 2011, MCHIP was asked to support Dr. Robert McPherson as the team leader for the national assessment of the CB-NCP.

CB-NCP ASSESSMENT

The CB-NCP was developed in 2007 by Saving Newborn Lives/Save the Children under the leadership of the Child Health Division and FHD of the MoHP to address the high and stagnant rates of newborn mortality. CB-NCP was initially piloted in 10 districts, and rapidly scaled-up till date in 41 districts. It is planned to scale it up in all 75 districts by 2015. In 2011, USAID, UNICEF, and Save the Children agreed to jointly support an assessment of the pilot so it could be validated, revised, and finalized for further scale-up. Given the recent 2011 Demographic and Health Survey findings that neonatal mortality remains at 33, the need for an evidence-based CB-NCP nationwide is compelling.



Cover of the CB-NCP Assessment

MCHIP facilitated the assessment in 10 initial pilot districts through an international expert on evaluation and a local research team. MCHIP provided technical input during CB-NCP assessment design, report finalization and printing. MCHIP organized meetings to share the findings with the MoHP officials, USAID, and a small group of external development partners and stakeholders. After this, CB-NCP package has been revised and some contents are changed. MCHIP printed 300 copies of the CB-NCP assessment report and handed over to the Child Health Division/Department of Health Services/MoHP.

Welcome and opening speech by Dr. Choplal Bhusal, Chairperson, NHRC.
Photo by: Jona Bhattarai

Objective 4: Support capacity-building to institutionalize research for decision-making to improve health outcomes.

Under this objective, MCHIP facilitated the research capacity-building activity led by the NHRC. The research workshop in September 2011 identified a set of priorities for evidence-based policy and program in public health (Annex P Workshop Report on Evidence Based Policy and Programming in Public Health, September 19, 2011). The priorities identified were as follows:

- Establish a national health information center to strengthen research capacity for evidence-based decision making ;
- Conduct research/analytical capacity-building of public sector at different level;
- Form national level coordination committee for evidence-based decision-making;
- Develop and strengthen a national monitoring and evaluation framework, based on NHSP II results framework;
- Strengthen capacity of NHRC as a research regulatory body and advisory body to the government;
- Develop mechanism for exchange between external development partner (EDP)/MoHP/NHRC/academia; and
- Formalize institutionalized linkages between EDP/MoHP/NHRC/academia.

MCHIP with Health for Life, a USAID health systems bilateral, (one of the objective/component of which is to work with NHRC), has made several attempts to move these priorities forward and gain commitment from stakeholders, government, and donor agencies. H4L is working closely with NHRC to finalize a concept note on how to move this forward.

In order to follow up the recommendations and action points, NHRC with support from MCHIP/USAID organized a follow on meeting on 16th June 2014, participated by 11 persons from NHRC, MCHIP and Health for Life (H4L).

All members in the meeting agreed that the initiative taken by the MCHIP was a very useful platform to continue work with H4L. H4L and other concerned stakeholders will continue the initiative started by MCHIP.

Cross-Cutting Themes

Scale-up- MCHIP contributed to scale-up at two levels. First, MCHIP conducted a pilot of calcium supplementation for the prevention of PE/E using the ANC to achieve maximum coverage and compliance. Although evidence on prevention of PE/E through calcium supplementation exists, this study was the first of its kind that tests a model for distribution of calcium at the community level. Lessons learned from the model can be used as a basis for scale-up of calcium supplementation in Nepal and introduction of this intervention in other countries.

More specifically, MCHIP conducted study on acceptability of calcium tablet and powder form in Banke district. The results of that study led to the implementation of a district wide pilot in Dailekh to assess the programmatic coverage and compliance of calcium. Based on the results of the pilot, GON already included the activity in its annual workplan to scale up calcium supplementation in two terai districts. MCHIP supported the DoHS/FHD to take this forward by forming PEE Technical Advisory Group.

Second, MCHIP facilitated an external evaluation for a CB-NCP in Nepal. The CB-NCP program was piloted and quickly scaled up in several districts. The evaluation provided valuable information on the strengths and weaknesses of the program. The intent of the evaluation was to engage the stakeholders with leadership from the MoHP to strengthen the CB-NCP programs and also to initiate discussions on the mechanisms to conduct periodic evaluations to assess the quality of similar types of scaled-up programs.

Recommendations and Way Forward

Objective 1:

The MoHP should consider scaling up the piloted model of calcium distribution to other districts in Nepal. Leadership from the MoHP and the TAG, which was fundamental to help guide program implementation and monitoring, will be important in the future as well. The scale-up plan was discussed during the calcium TAG meeting held on November 21, 2013 and Advocacy meeting held on March 2014. The FHD has planned to scale up the program in 2014/2015 in two Terai districts in which PE/E caseload, number of pregnancies, and availability of partner agencies are high. To make this scale-up happen, the GON/FHD has requested support from concerned stakeholders and partners. Official memo (Tippani) from the FHD for scale-up of calcium supplementation in additional district and formation of PE/E TAG was approved on April 2014 by the MoHP. FHD has formed PE/E Technical Advisory Group and first meeting was held on 27 May 2014. Similarly, discussion is initiated in DOHS/MoHP to include calcium in the government essential drug list.

- If calcium supplementation is scaled up to additional districts, the MoHP can consider integrating training of health care workers and FCHVs into regular district review meetings or other ongoing meetings, and calcium procurement and distribution to health facilities could be incorporated into the government's logistics management system.
- Jhpiego will continue supporting TAG meetings to support GON in its scale up efforts.

Objective 2:

- Jhpiego is supporting to redesign the proteinuria test to address the high positive rate. In the meantime, strengthening the recommended PE/E detection practices, such as blood pressure measurement and dipstick urine test, at health facilities during ANC visits.

Objective 3:

- The integration of MNH requires a pathway or a step-by-step guideline for MNH integration and provision of uniform and universal access to services in all 75 districts. A mechanism to periodically evaluate new programs that are in the process of scale-up is also needed.

Objective 4:

- H4L and other concerned stakeholders will take this initiative forward.

Annex 1: Indicator Matrix

INDICATOR/ BENCHMARK	DEFINITION/ CLARIFICATION	DATA SOURCE/ COLLECTION METHOD	FREQUENCY OF DATA COLLECTION	JUNE 2014
Objective 1: Provide technical assistance on calcium supplementation for prevention of PE/E.				
Resources for PE/E prevention developed, documented, and disseminated	Pilot, training material, awareness material, reporting tool, findings, and PE/E scale-up strategy	Produced materials	Annual	1) Training material, 2) Awareness material, 3) Reporting tool, 4) Process brief, 5) Evaluation brief, 6) Survey Report, 7) Costing analysis, 8) TAG meeting minute which addresses scale up plan
Number/% of pregnant women that consumed calcium for full course	Total number of pregnant women who consumed calcium for 90 days	Monitoring data	Quarterly	67.0% (789/1,178)
Objective 2: Develop affordable and reliable test to detect PE/E at community level				
New proteinuria test developed, tested, and clinically proven to use in the community	Number of pregnant women participating in the testing who correctly use/ interpret the test/Total number of pregnant women participating in the testing	Study results	One time	Stopped because of high false positive rate
Objective 3: Support implementing partner in advocacy, documentation and dissemination of evidence-based MNCH/FP interventions				
Evidence-based initiatives documented and disseminated	Integration framework, documents, publications, presentations, meeting minutes developed and presented	Publication, presentation, documentation	Quarterly	1.CB/NCP assessment report 2) MNH common framework 3) Concept note for common evolution of integrated training programs
Objective 4: Strengthen local research capacity				
# of people trained in using research findings and other data for decision-making (disaggregated by gender and caste/ethnicity) with USG fund	Number of people participating in the research findings capacity-building workshop	Workshop report	Annual	49 people participated in research workshop

Annex 2: Success Stories

Protecting Mothers' Health in Rural Nepal with Two Tablets of Calcium a Day
January 2013

Among the rolling hills of Western Nepal in the district of Dialekh, 25-year old Sunita Adhikari (real name) is attending antenatal care (ANC) regularly during her third pregnancy. The local female community health volunteer (FCHV) told her that the local health clinic was now giving out calcium for free to all pregnant women. Although she knew about the value of calcium during pregnancy, it was simply too costly (around $10).

The next day, she went to the clinic. There, health workers did a thorough checkup (including testing her urine and measuring blood pressure), counseled her about calcium, and gave her a bag containing two bottles of calcium and an information brochure. When she met a Jhpiego Maternal and Child Health Integrated Program (MCHIP) staff later in her pregnancy, she shared, *"I already finished one bottle and started the second bottle and I am feeling better. I have recovered from the weakness which I was experiencing."* She was really happy about getting it free of cost, and encouraged other pregnant women to go for antenatal care and take calcium.

Sunita is one of the estimated 7,407 pregnant women in Dailekh to date to benefit from the new calcium supplementation project being implemented by the Family Health Division (FHD) of the Nepal Ministry of Population and Health (MoHP) with support from Jhpiego. Calcium is both an important and innovative part of ANC in developing countries such as Nepal, where eclampsia is the leading cause of maternal death. If undiagnosed, these women have seizures and other medical conditions that put them and their babies at high risk of death. Calcium during pregnancy is proven to reduce the risk of pre-eclampsia by 50%.

Photo by: Dipendra Rai

This is a real photo of Sunita Adhikari, Pagnatha VDC, ward no. 5. She gave consent to use her name and photo.

In remote villages in many places of Nepal, accessing health care can mean a several hours long walk in mountainous terrain. This could mean 50% fewer mothers and babies who need emergency care can access care—this is especially critical in places where they cannot easily reach a hospital quickly.

Because this condition can develop rapidly and is difficult to predict who might be at risk, the government of Nepal and Jhpiego's MCHIP, supported by USAID, together have started a calcium supplementation project in one district of Nepal, giving all pregnant women who come for even one ANC checkup a supply of calcium tablets for the duration of her pregnancy. The project seeks to demonstrate that women are interested in receiving calcium and they take it throughout their pregnancy. Based on these findings, the government will consider providing it for free for all pregnant women in Nepal (as they already do with iron folic acid tablets).

The MoHP and Jhpiego launched a district-wide pilot in August 2012, after training all 268 health workers and 789 FCHVs in Dailekh. Although it was expected that not all pregnant women would be interested in taking calcium, it has proven so popular that in the first five months of the project, almost 5,000 women at all stages of their pregnancy have come to receive calcium.

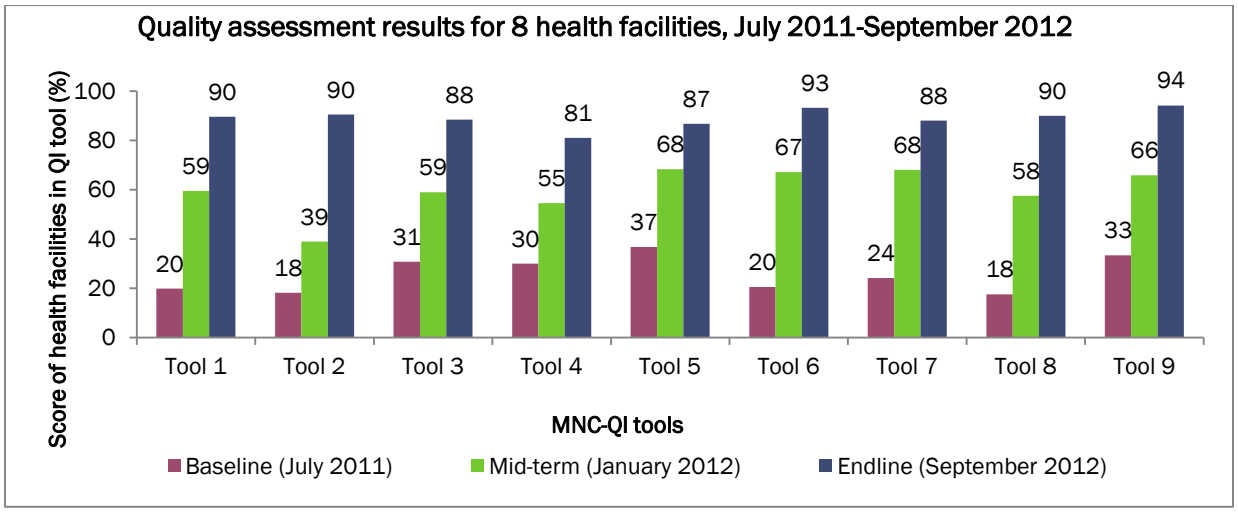
Improved FP/MNCH Quality of Care as a Result of MCHIP and HealthRight International (HRI) Collaboration

MCHIP/Jhpiego has provided technical support to HealthRight International (HRI), to improve the quality of reproductive health services in Arghakhanchi, one of the hilly districts of Nepal since 2010. HRI is conducting operations research in this district through a Child Survival Grant. MCHIP supported HRI to use Maternal and Newborn Care Quality Improvement (MNC-QI) tools to improve the quality of family planning (FP) and maternal and newborn care (MNC) services in eight health facilities: 1 district hospital, 1 primary health center, 4 health posts and 2 sub health posts. The MNC-QI tools are a Ministry of health and Population resource developed in 2007 with technical assistance from Jhpiego's USAID-funded ACCESS Program.

Health workers being trained by Dr. Kusum Thapa

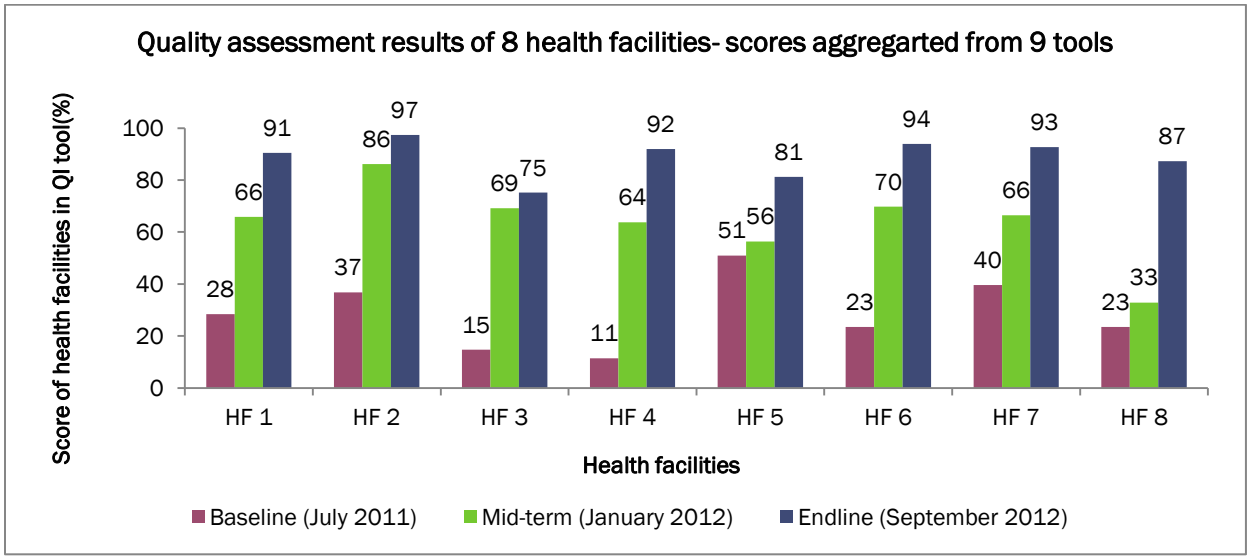
MCHIP provided technical support to conduct a six day training for nurses and doctors from the eight health facilities in July 2011 to orient them on the MNC QI process, conduct self-assessment of health facilities, identify gaps, analyze causes, and develop a plan of action for interventions. Joint visits were conducted in January 2012 to review progress, provide need based technical support and prepare plan of action for remaining issues. Dr. Kusum Thapa from MCHIP and HealthRight staff visited seven health facilities and provided site-specific technical advice on clinical settings, work division between skilled birth attendants (SBA) and non-SBA, complication management and referral.

The third and final visit was conducted 25-27 September 2012. A workshop was held with staff from all eight sites to review progress and lessons learned. Quality is defined as 80% or better. There is remarkable progress in the Quality score of all health facilities across the tools as shown in the below graphs.



Note: T1-Infection Prevention, T2-Focused Antenatal Care, T3-Complications during pregnancy, T4-Normal Delivery and Immediate Newborn Care, T5-Postpartum Care, T6-Newborn Care, T7-Complications during labour and child birth, T8-Assessment of a newborn with a problem, T9-Family Planning.

Looking into the different QI tools, assessment revealed a dramatic increase in the quality scores across all tools. There is more than three times increase in the quality scores from baseline to end-line at most of the tools.



Looking specifically into the eight health facilities, seven facilities achieved quality on all tools. One HP has not yet started 24-hour delivery services so have not yet achieved 80%.

To share these experiences using MNC-QI tools to improve quality of care, representatives from USAID, Nick Simons Institute and Jhpiego visited Arghakhanchi district in September 2012 and interacted with district team and Health Facility Operation Management Committee members. MCHIP and HRI explained the overall process and discussed possibilities of scaling up MNC QI process in other districts.

Annex 3: List of Presentations at International Conferences and Publications

- Sanghvi H. 2013. *Preventing Pre-Eclampsia: Supplementing Calcium in Nepal.* Presentation on calcium pilot at pre-conference meeting on nutrition at the Global Newborn Health Conference, Johannesburg, South Africa.
- Aryal S. 2013. *MoHP Addresses Eclampsia, Leading Causes of Maternal Deaths in Nepal*. Presentation at the Global Maternal Health Conference.
- Plan to submit article on "Coverage, Compliance, Acceptability and Feasibility of a Program to Prevent Pre-eclampsia and Eclampsia through Calcium Supplementation for Pregnant Women in Nepal", in BMC Pregnancy and Child Birth Journal.

Annex 4: List of Materials and Tools Developed or Adapted by the Program

A. Research Plan for Calcium Pilot Including Research Tools

B. BCC Materials for Calcium pilot

C. Process Brief Calcium Pilot

D. Findings Brief Calcium Pilot

E. Cost Analysis of Calcium Pilot (In Progress)

F. Findings Report of Calcium Pilot

G. Calcium Dissemination Meeting Report

H. Calcium Technical Advisory Group (TAG) meeting minute (fourth)

I. Findings Report of Acceptability Study

J. Research Plan for Proteinuria Pilot Including Research Tools

   J1-Research Plan for Step 1-2

   J2-Research Plan-NHRC for Step 1-2

   J3-Research Plan for Step-3

   J4-Research Plan-NHRC for Step-3

   J5-Research Tools for Step-3

   J6-Research Plan for Step-4

   J7-Research Plan-NHRC for Step-4

   J8-Research Tools for Step-4

K. Proteinuria Reagent Report

   K1-PU Report Step-1-2

   K2-PU Report Step-3

   K3-PU Report Step-4

L. BCC Materials for Proteinuria Point of Care Self-Test

   L1-BCC materials for PU Step-3

   L2-BCC materials for PU Step-4

M. CB-NCP Assessment Report

N. Concept Note on the Evolution of an Integrated Training Program for Community-Based Maternal, Neonatal and Child Health Interventions

O. A Common Framework for Maternal and Newborn Health in Nepal

P. Workshop report on Evidence Based Policy and Programming in Public Health

Q. Meeting notes of Follow-on meeting of Evidence Based Policy and Programming in Public Health