

Fitting Community Based Newborn Care Package into the health systems of Nepal

Pradhan YV,¹ Upreti SR,¹ KC NP,¹ Thapa K,² Shrestha PR,¹ Shedain PR,¹ Dhakwa JR,³ Aryal DR,⁴ Aryal S,¹ Paudel DC,⁵ Paudel D,⁶ Khanal S,⁷ Bhandari A,⁸ KC A⁹

¹Department of Health Services, Ministry of Health and Population, Government of Nepal, ²Paropakar Maternity and Women's Hospital, Ministry of Health and Population, ³Perinatal Society of Nepal, ⁴Nepal Pediatric Society, ⁵Nepal Family Health Program/USAID, ⁶United States Agency for International Development, Nepal, ⁷United Nations Children's Fund Nepal, ⁸Department for International Development, ⁹Save the Children Nepal.

ABSTRACT

Community-based strategies for delivering effective newborn interventions are an essential step to avert newborn death, in settings where the health facilities are unable to effectively deliver the interventions and reach their population. Effective implementation of community-based interventions as a large scale program and within the existing health system depends on the appropriate design and planning, monitoring and support systems. This article provides an overview of implementation design of Community-Based Newborn Care Package (CB-NCP) program, its setup within the health system, and early results of the implementation from one of the pilot districts.

The evaluation of CB-NCP in one of the pilot districts shows significant improvement in antenatal, intrapartum and post natal care. The implementation design of the CB-NCP has six different health system management functions: i) district planning and orientation, ii) training/human resource development, iii) monitoring and evaluation, iv) logistics and supply chain management, v) communication strategy, and vi) pay for performance. The CB-NCP program embraced the existing system of monitoring with some additional components for the pilot phase to test implementation feasibility, and aligns with existing safe motherhood and child health programs. Though CB-NCP interventions are proven independently in different local and global contexts, they are piloted in 10 districts as a "package" within the national health system settings of Nepal.

Keywords: Nepal, community-based newborn care package, health system management, pay-for-performance.

INTRODUCTION

An estimated 18 to 37% of neonatal deaths could be averted through expanded coverage (90%) of cost effective interventions if delivered through outreach, family or community approach.¹ Impact of neonatal interventions at the family or community level could be increased through comprehensive community case management of neonatal illnesses, such as neonatal sepsis² and birth asphyxia³ by reorienting newborn care into the home and community. The community-based newborn intervention package implemented in India,⁴⁻⁸ Pakistan,^{9,10} Bangladesh¹¹⁻¹³ and Nepal¹⁴ have demonstrated that women in areas assigned to receive a community-based intervention package from health workers with additional training have decreased illnesses and complications during pregnancy and birth associated with decreased stillbirths, perinatal and neonatal deaths.¹⁵

In Nepal, the community-based programs are successful as a result of strong network of the peripheral level health facilities, community health workers (CHWs), female community health volunteers (FCHV), and the mother's group (MG). FCHVs, the community women selected by the local mothers groups, are responsible to deliver basic health services in the community and outreach clinics, and some of them have been working as a volunteer since 1988. As a result of joint work, FCHVs and CHWs have been successful in ensuring high coverage of services for mothers and children such as immunization, vitamin A supplementation and pneumonia case management. Table 1 summarizes the profile and role of these health workers and volunteers in different national health programs.

Correspondence: Dr. Ashish KC, Save the Children, Kathmandu, Nepal.
Email: aaashis7@yahoo.com.

Table 1. Role of Community Health Worker (CHWs) and Female Community Health Volunteer in other national programs.

Health Cadre	Basic Education	Placement	Responsibility
Maternal and Child Health Worker	Medical training for 6 months after completion of grade 10	Sub-Health post, Health post, Primary Health Care Center	Basic first aid services, antenatal care package, promotion of clean delivery services, postnatal care services, family planning services
Village Health Worker	Medical training for 6 months after completion of grade 10	Sub-Health post, Health post, Primary Health Care Center	Basic first aid services, immunization to children at health facility, immunization outreach clinics, prevention and management of diarrhea, management of pneumonia and select infectious diseases at the community level.
Female Community Health Volunteer	Training for 18 days	Each ward or base on population density	Educate the community on benefits of delayed first sex, marriage and childbearing, importance of safe sex, promotion of family planning services, promotion of antenatal care, delivery care and postnatal care, essential newborn care, prevention and management of diarrhea, management of pneumonia and select infectious diseases at the community level. Promotion of immunization for children and participate in campaign. Support MCHW and VHW in outreach clinics

Considering global, regional and national evidences on neonatal survival interventions, Nepal's existing health care delivery system, and the guidance of the 2004 National Neonatal Health Strategy;¹⁷ the Ministry of Health and Population (MOHP) developed the Community-based Newborn Care Package (CB-NCP)¹⁶ in 2007. The package consists of seven interventions to be delivered through the FCHVs, CHWs and first level health facilities for improving neonatal survival. Adapting the decision making framework,¹⁸ the interventions were selected based on the amount of evidence for impact of

the intervention/strategy, feasibility for Nepal context if implemented at scale, and cost of implementation.¹⁸ Though these interventions are proven independently in different local and global contexts, they were never been tested as a “package” in the national health system settings of Nepal, neither has there been an assessment done on the effect of the package on the overall health system¹⁹

The CB-NCP is being piloted in ten districts by multiple partners under the leadership of the MOHP representing different geographic regions (figure 1).

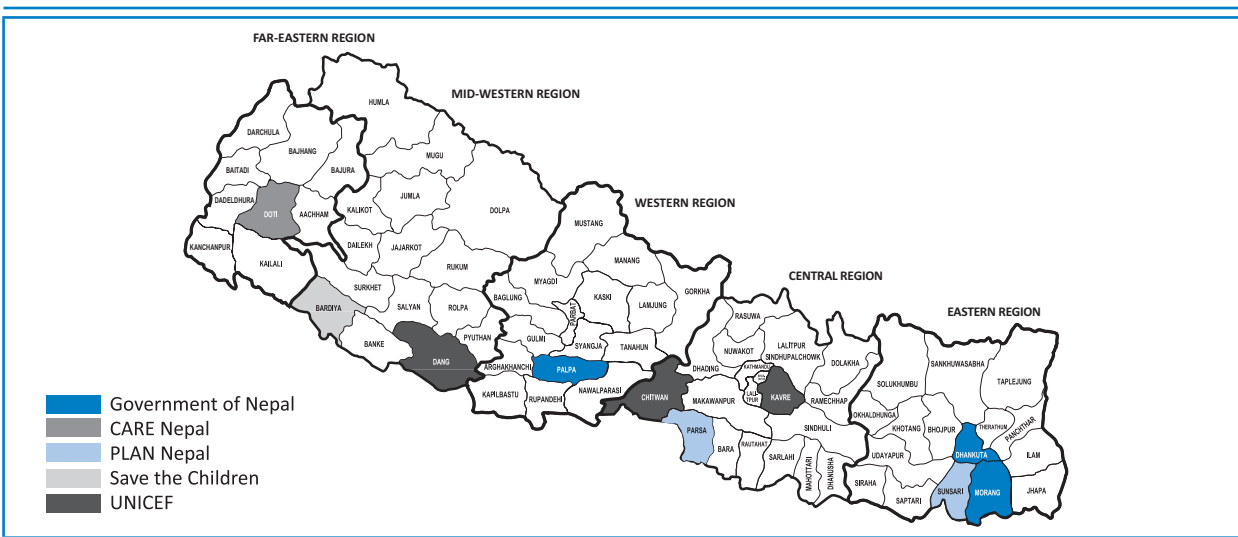


Figure 1. Pilot implementation districts for Community Based Newborn Care Package.

When most of the community based trials are piloted, they neglect to document the process adopted to design the trial, complete description and role of the different level of provider, the degree of supervision provided to those workers, and early findings to adjust the program; which could help in identifying the importance of this factor and its association with other outcomes.¹⁵ This article provides an overview of implementation design of CB-NCP program, its setup within the health system, and early results of the implementation from one of the pilot districts.

The implementation design of CB-NCP is based on the safe motherhood and child survival program's information tools, HMIS system and manuals have been consulted^{16, 20-22}. Thorough assessment and synthesis of all CB-NCP Program draft training manual,¹⁶ monitoring and evaluation plan, communication strategy,²³ performance based incentive scheme,²⁴ the meeting notes of the technical committee for CB-NCP have been done. For the early results of implementation of CB-NCP, data from the Bardiya district has been used. A before and after cluster random survey with 630 recently delivered women (those delivering within last 11 months) was carried out to measure the coverage of interventions.

Within the CB-NCP implementation phase of 18 months (January 2010 to June 2011) in Bardiya district, the coverage for both maternal and neonatal services has significantly increased. The counseling to pregnant women by FCHV, the practice to prepare for birth (e.g. arranging money, transport and identifying the place and assistant for birth), and pregnant women getting antenatal checkup from the skilled provider has improved significantly. The delivery assisted by skilled birth attendant has increased by two-fold and the FCHV attendance at birth for newborn care has significantly increased three-fold. To prevent the newborn baby from hypothermia and to ensure proper nutrition, the immediate initiation of breastfeeding, immediate drying and wrapping after birth and delaying bathing until 24 hours has significantly increased. In Bardiya, the weighing of newborns delivered at home within 24 hours has increased by fourfold, and postnatal checkup for mothers and newborns by FCHVs, CHWs and health facility workers has increased more than 90%. The program also helped to improve availability of essential medicines (e.g. cotrimoxazole pediatric tablet, gentamicin injection) and supplies (e.g. insulin syringe, clean delivery kit, De Lee suction) for newborn at the health facilities. (Table 2)

Table 2. Coverage of maternal and neonatal survival interventions over the period of 18 months in Bardiya (January 2010-June 2011).

SN	Indicator	Bardiya					
		Baseline (N=630)			Endline (N=630)		
		n	N	%	n	N	%
	Pregnancy period						
	At least 1 ANC visit with skilled provider	344	625	55.0%	403	615	65.5%
	Counseling during pregnancy from FCHV	428	625	68.5%	597	615	97.1%
	Women with complete birth plan (place of delivery/attendant, transport, money)	62	625	9.9%	298	615	48.5%
	Delivery/Intrapartum						
	Skilled birth attendance (doctor, nurse, ANM)	188	625	30.1%	459	615	74.6%
	FCHV present at delivery - home births	64	414	15.5%	58	114	50.9%
	Immediate breastfeeding within 1 hour	399	625	63.8%	551	615	89.6%
	Drying/wiped immediately after birth (before placenta)	380	625	60.8%	546	615	88.8%
	Bath delayed at least 24 hours	237	625	37.9%	334	615	54.3%
	Post-partum/natal period						
	Newborn weighed at birth (within 24 hours in Bardiya)	148	625	23.7%	551	615	89.6%
	PNC check for mother within 2 days	408	625	65.3%	578	615	94.0%
	PNC check for baby within 2 days	405	625	64.8%	588	615	95.6%
	Adequate stock status on CB-NCP commodities	HW		CHW		FCHV	
	Cotrimoxazole Pediatric tablet	100		100		92	
	Gentamicin vial	97		97		NA	
	Insulin Syringe	97		97		NA	
	CDK	97		NA		97	
	Dee-Lee suction	94		NA		96	

The implementation design of the CB-NCP has six different health system management functions: i) district planning and orientation, ii) training/human resource development, iii) monitoring and evaluation, iv) logistics and supply chain management, v) communication strategy, and vi) pay for performance.

1. District Planning and Orientation

District (Public) Health Office [D(P)HO] is the primary implementation unit for the package. An orientation and planning exercise was conducted with district level stakeholders to develop the district specific detailed implementation plan. The plan analyzed and mapped out human resource, appropriate training approaches (e.g. the number of training batches, training venues, dates, trainers) and logistics for all levels of trainings, follow-ups, supervision and monitoring activities of the program. For the exercise, standard planning guidance, tools and materials were provided by the CB-NCP secretariat to maintain consistency and quality in program implementation. The secretariat, housed at the Child Health Division and co-led by the Family Health Division provided overall backstop for technical and financial management of the program throughout the pilot districts.

2. Training

The CB-NCP training is focused to enhance the competency of health workers and volunteers, to deliver quality services for mothers and newborns, to strengthen referral systems, and to reinforce essential newborn care messages. The training package was developed by the training sub-committee led by the National Health Training Center and supported by experts on neonatology, safe motherhood, child health, and training methods. Three sets of training packages were developed for i) facility based health workers, ii) CHWs, and iii) FCHVs Table 3 summarizes the description of training components and approaches for different groups.

Training package for the health facility-based workers:

A seven-day training package for health workers focuses on competency based learning on infection prevention, immediate and routine newborn care, assessment during the postnatal visit, assessment and management of newborn with infection, low birth weight, birth asphyxia, and hypothermia as well as information and logistics management. The last two day's are focused on program management, supervision and community mobilization based on the Community-based Integrated Management of Childhood Illness (CB-IMCI) package.

Training package for VHWs and MCHWs: A five days training curricula for VHWs and MCHWs focuses on competency based learning on essential newborn care, assessment and management of infected newborn,

Table 3. Training Package for Health Workers.

Category	Training days	Components	Training facility and trainer
Facility-based Health Workers (Medical Officer, Staff Nurse, Health Assistant, Auxillary Health Workers, Auxillary Nurse Midwives)	7	Essential newborn care, assessment and management of infected newborn, low birth weight babies, referral management of sick newborn and information management, program management, supervision and community mobilization	Usually trained at district or higher level hospital for clinical exposure, At least three with one master trainer, one SBA trainer and the third trainer
Community-based Health Workers (Village Health Workers, Maternal and Child Health Workers)	5	Essential newborn care, assessment and management of infected newborn, low birth weight babies, referral management of sick newborn and information, logistics management and supervision	Usually trained at district level hospital with clinical exposure One district level trainer, one health facility trainer and the third trainer
Female Community Health Volunteers	7	Birth preparedness, hand washing, clean delivery practices, essential newborn care, postnatal care, assessment and management of infection, low birth weight, hypothermia and birth asphyxia and information management, conducting mothers group meeting	Usually at the local health facility One district level trainer, one local health facility staff and one VHW/ MCHW from their area

low birth weight babies, referral management of sick newborn and information, logistics management and supervision support to FCHVs.

Training package for FCHVs: A seven days training curricula for the FCHV focuses on competency based training on social mobilization for birth preparedness, hand washing, clean delivery practices, essential newborn

care, postnatal care, assessment and management of infection, low birth weight, hypothermia and birth asphyxia and information management. The training also deals on conduction of mother's group orientation. The training curricula include job-aid illustrating the pictorial chart (figure 2) of activities to be conducted from antenatal to postnatal period with management of sick newborns.

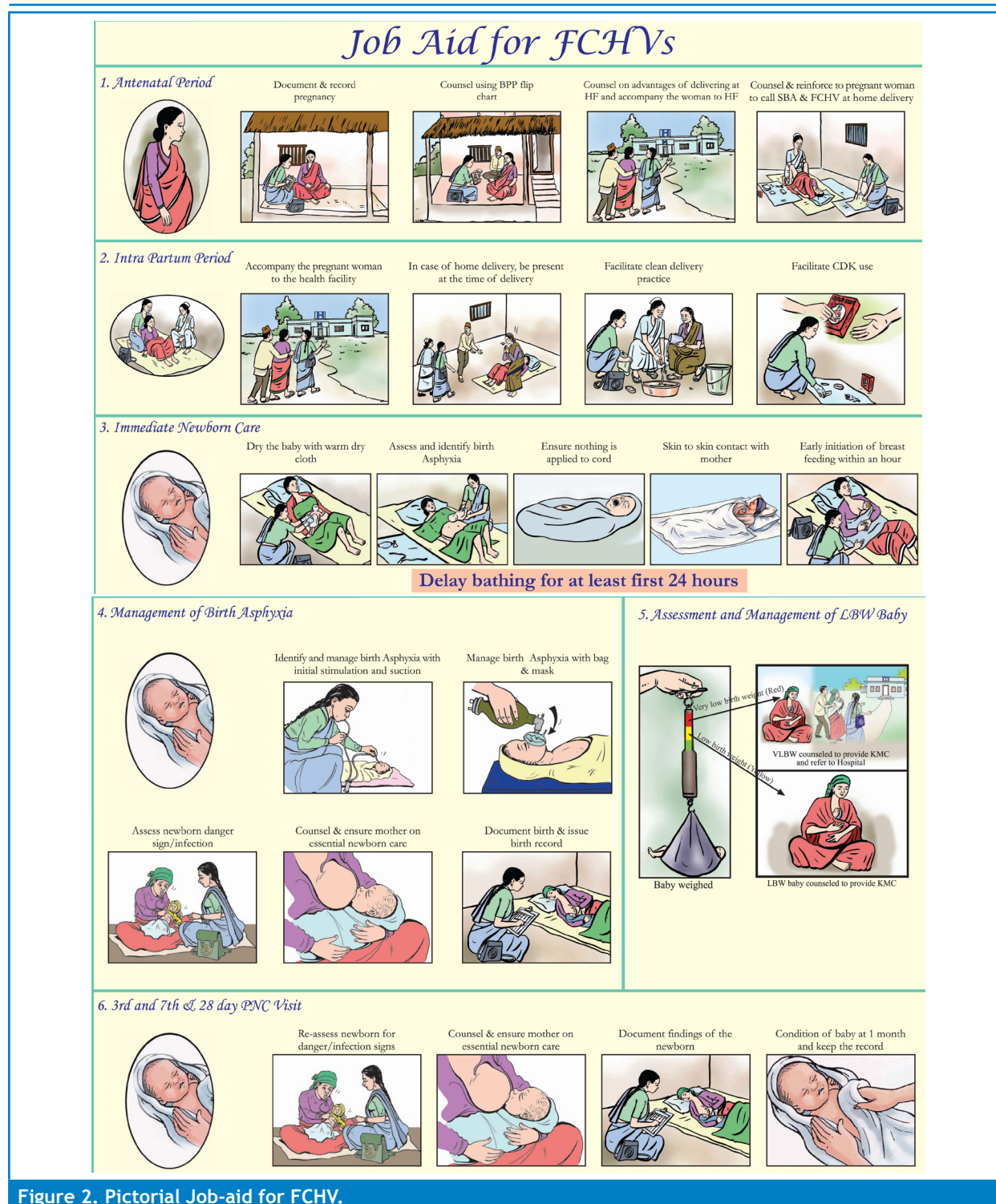


Figure 2. Pictorial Job-aid for FCHV.

3. Monitoring and Evaluation

The CB-NCP embraced the existing system of monitoring with some additional components for the pilot phase to test implementation feasibility. A monitoring and evaluation sub-committee, led by Management Division and supported by monitoring and evaluation experts, was responsible for the design of the system, oversight of program implementation and adjust necessary changes in the program monitoring and implementation. The evaluation approach for CB-NCP program was designed to measure program effectiveness to bring changes in service utilization and care practices for mother and newborn, as well as to assess the competency of peripheral health workers, CHWs and FCHVs to deliver newborn care. A 'before and after household cluster random survey' was planned to measure the changes to assess awareness, knowledge, attitude and practices for newborn care as well as service utilization and care seeking behavior. A 'follow-up after training' survey was performed to assess the infrastructure, supplies and working environment and competency of facility based health workers, CHWs and FCHVs in delivering newborn care services.

Pregnant Women registration form	Newborn Service Form	Infected Baby management form
Last menstrual period	Caste, ethnicity, Age	Day of initiation of illness
Expected Date of Delivery, Counseling on birth preparedness	Place of birth	Duration of illness
	Person present at the time of birth	Identification of signs of infection
	Delivery care-cord cutting, newborn care	Assessment and Management of infection
	Assessment and management of birth asphyxia	Referral care for infection
	Postnatal care on day 1, 3 and 7	

Figure 3. Pregnant to newborn service information.

The monitoring system for CB-NCP includes seven specific forms (CB-NCP 1-7) that was designed to collect, compile and report information to monitor the progress in terms of coverage of service delivery outputs. The

service delivered by the FCHV to a pregnant women until her baby is 28 days is recorded in three different forms (figure 3): i) pregnancy registration form (CB-NCP 1), ii) routine newborn care form (CB-NCP 2) that capture information on birth-preparedness counseling during pregnancy to follow-up visits upto 28th day of birth, including delivery practices, assessment for birth weight and essential newborn care to prevent hypothermia, and iii) sick newborn treatment and referral form (CB-NCP 3).

For the ease of recording by illiterate or semi-literate FCHVs, 'CB-NCP 2' and 'CB NCP 3' are fully pictorial. Additionally, 'CB-NCP 4' is used to record newborn services delivered by CHWs and 'CB-NCP 5' is used to record services delivered by the health facility. 'CB-NCP 6' and 'CB-NCP 7' are used to compile records from CHWs and FCHVs and to report to the district CB-NCP focal person. On monthly meetings, copies of 'CB-NCP 2' are collected by CHWs from FCHVs, provided necessary feedback and replenished any commodities to FCHVs. After the verification for any mismatch and scrutiny of information, the data is compiled in 'CB-NCP 6 and 7' and are reported to D(P)HO. The district-based CB-NCP focal person or statistical assistant compiles, analyzes and provides feedback to the health facilities and enter the data in the software linked with the CB-NCP database system, which is linked with the national CB-NCP database. The information from the CB-NCP monitoring system is used for further planning, monitoring and feedback processes.

The review meetings are integral part of the CB-NCP monitoring system and are held on monthly basis with FCHVs at the VDC level and facility-based health workers at *Ilaka* level. These review meetings are focused to discuss the issues and challenges faced by health facility, CHWs and FCHVs to deliver the service at the community, share the program performance, analyze the trends, scrutinize the data and assess the discrepancies, planning for future, and refresh their knowledge and skills on technical and management aspects of the program. Additionally, trimester review meetings are held at the *Ilaka* level and participated by the health facility in-charges and CHWs of the particular area. A two day semi-annual review meetings are organized at the district headquarter by the D(P)HO to discuss program performance and future planning and attended by the in-charges of the health facilities. Figure 3 shows the *information flow system and Data quality control mechanism for the program*

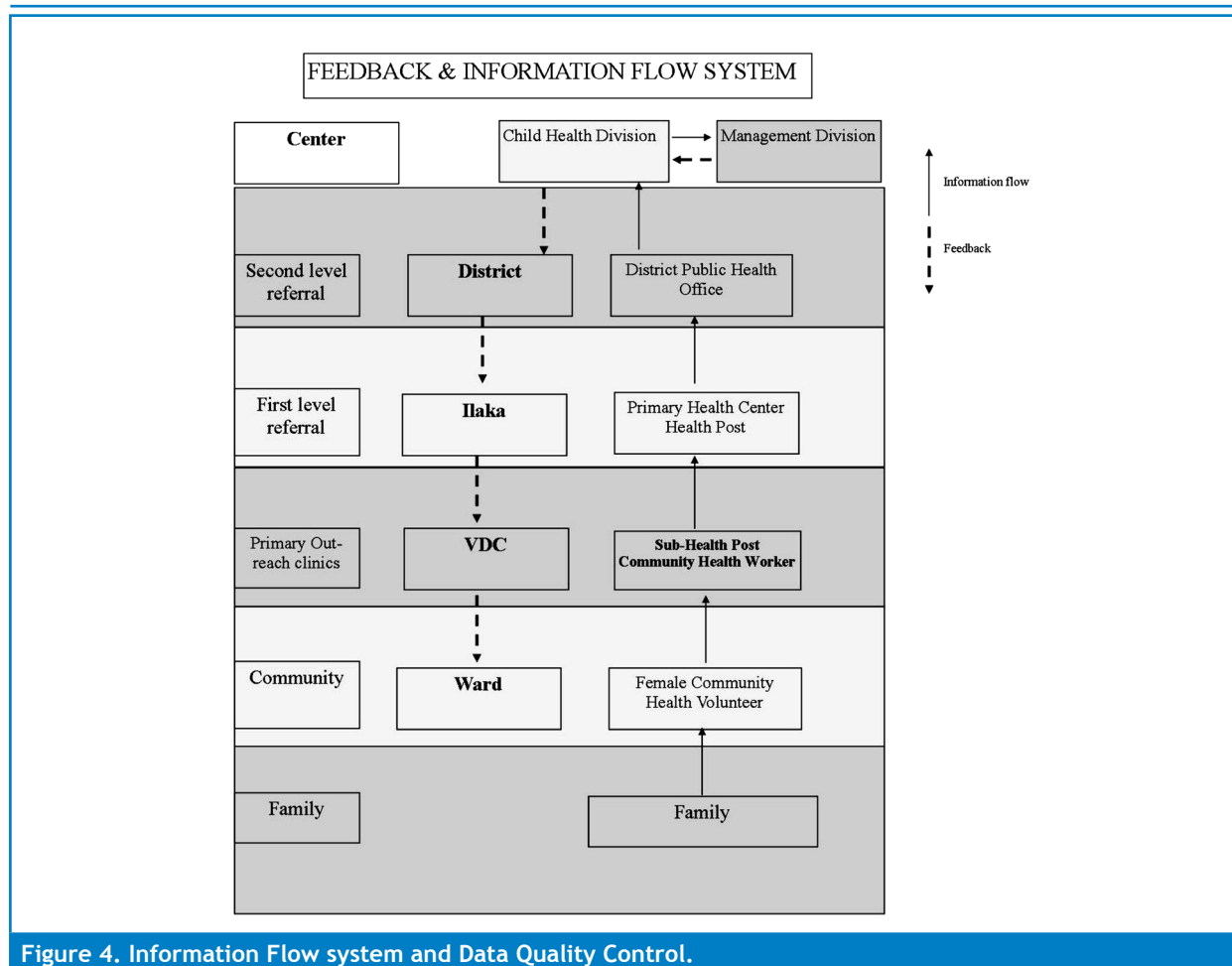


Figure 4. Information Flow system and Data Quality Control.

4. Logistics and supply system

The logistics sub-committee led by the Logistic Management Division and participated by a team of logistic management experts developed the logistics management plan for the CB-NCP. The team identified the logistic required for district planning, training, supervision and service delivery. The logistics specifications are developed for CB-NCP drugs and commodities (e.g. gentamycin injection, insulin syringe, De Lee suction tube, clean delivery kit, bag-and-mask, acute respiratory infection (ARI) timer, cotrimoxazole pediatric tablets) including guidance on the required and buffer stock levels. The logistics of CB-NCP program is managed by the respective D(P)HO for the storage, distribution, forecasting of CB-NCP drugs and commodities, however, some procurement of the commodity is done by the funding agency.

5. Communication Strategy

As behavioral change communication is one of the key intervention components of CB-NCP, the communication sub-committee led by the National Health Education, Information and Communication Center and participated

by a team of program communication experts developed uniform program message and communication strategy. The overall purpose of the CB-NCP communication strategy is to provide standardized guideline and framework for conducting the communication activities to support implementation of the CB-NCP. The strategy adopted three mutually reinforcing approaches: advocacy, community and social mobilization, and behavioral change communication.

6. Pay for Performance Package for FCHVs

Though FCHVs are primarily volunteers, they had been receiving nominal incentives either in kind or cash (e.g. FCHV fund, transport fare during national campaigns, dress allowance, kits) through some of the existing national programs. As the CB-NCP program expects specific functions on defined time by the FCHVs (e.g. being present or accompanying the woman to the health facility during delivery, postnatal visits), a pay-for-performance scheme was envisioned for FCHVs in this program. During the design of CB-NCP, the incentive scheme was proposed that would ultimately be part of the overall national program.

A team of high level policy makers from the Ministry of Health and Population and partners, designed the performance based incentive to be implemented through the existing health systems. The objective of performance based incentive is to improve maternal, neonatal health and survival and provide a 'recognition contribution' to FCHVs for the additional work of management of newborns. The pay-for-performance is expected to increase coverage of pregnant women identified, registered and counseled by FCHVs, antenatal care and birth preparedness, increased antenatal and institutional delivery services, increased attendance at birth to assess and manage baby for any emergency and routine care and increase the coverage of postnatal home visit on the day of birth, third, seventh and 29th day.

The review of safe delivery incentive scheme was done and the potential positive and negative effects of performance based incentive were analyzed. Based on the review, potential positive effects of the incentives were to bring improvement in availability of family and domiciliary antenatal, intrapartum and postnatal services; improvement in coverage and quality of services delivered by FCHVs, improvement in FCHV's motivation to deliver those services, and improvement in linkages between health facility and community. However, the potential drawbacks of the program were that FCHVs may prioritize CB-NCP program and neglect other important national programs that does not have incentives, incentives may not be sustainable in the long run due to high budget implication, stopping the program may impair performance of multiple programs, duplication in coverage and reporting issues between FCHVs especially in the districts with population based FCHVs, and possibility of fraud and manipulation in the data in the performance reports. Five maternal and newborn indicators were set and weighted to measure the performance of FCHV, which will be assessed through regular monitoring data sheet and verified on a periodic basis. These monitoring indicators and their weight for performance are as below:

- Percentage of women counseled on birth preparedness (20%)
- Percentage of women delivered at health facility (10%)
- Percentage of newborn (who were delivered at home) weighed within 3 days of life (20%)
- Percentage of newborn receiving postnatal care on day 1, 3 and 7 (30%)
- Percentage of babies who were followed on 29th day of life (20%)

Each FCHV submits the service statistics to their health facility on a monthly basis based on the CB-NCP 2 form. These completed forms of FCHVs are compiled into a reporting form (CB-NCP 6) on a monthly basis. The

information is analyzed on a quarterly basis through the service monitoring sheet, and the VDC's performance is categorized as 'best' (if their performance weightage is 70% and above), 'better' (if their performance weightage is between 60 and 69%), 'good' (if their performance weightage is between 50 to 59%) and 'low' (if their performance weightage is less than 50%). Those VDCs which are best performing will receive an amount of 400 Nepalese Rupees per pregnant women, better performing will receive an amount of 300 NRS per pregnant women, good performing will receive an amount of 200 NRS per pregnant women and low performing will receive no incentive (Table 4).

Table 4. Ranking of the Village Development Committees (VDCs) based on the performance Weightage.

Rank of VDC in Community Based Newborn Care Package	Performance Weightage	Remuneration to VDC
Best performing VDC	70% and above	NRS 400 per newborn served in that quarter in X VDC
Better performing VDC	60-69 %	NRS 300 per newborn served in that quarter in X VDC
Good performing VDC	50-59 %	NRS 200 per newborn served in that quarter in X VDC
Low Performing VDC	Less than 50 %	None

The calculation of the total incentives of a VDC will be done by health facility in charge and submitted to the D(P)HO for verification, endorsement and reimbursement. After the verification of the data from D(P)HO, the amount would be reimbursed to the FCHV fund at each VDC. Then, the amount is reimbursed to each FCHV on the basis of number of newborn served during that quarter.

WAY FORWARDS

Of the six components of the health system management, except performance based incentive to FCHVs, others have been already well tested either at the health facility or in community and are regular function of health system.

Based on the experience and lessons learnt from similar community based programs, it is imperative to have strong district leadership for effective implementation,

ownership and governance of the program. Similarly, follow-up after training, review meetings and on-site monitoring helps to strengthen and reinforce different program components to improve the competency of health worker and creates positive working environment.

Besides, postulations were made on performance-based incentive scheme for FCHVs in terms of its effect on coverage of services, motivation of FCHVs and CHWs to newborn care and other existing programs, and level of effort on the financial management of the scheme. A process evaluation of the performance based incentive of CB-NCP has been carried out and the findings and discussion would be done in a separate paper.

Among seven neonatal interventions, the behavioral change communication and postnatal counseling are assumed to increase the newborn care practice as well as care seeking practices. With regard to the community case management of neonatal infection, the completion of gentamicin injection for a possible severe bacterial infection; referral needs assessment as well as community case management of low birth weight babies; the compliance to Kangaroo Mother Care and referral to health facility needs to be observed. Finally, the more complex intervention, community case management of birth asphyxia needs to be assessed for its capture rate, validation of birth asphyxia managed with equipments and the outcome of intervention. An evaluation is in process to assess the health systems' performance as well as the feasibility of complex interventions within the health system paradigm.

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