

A Situational Analysis of Newborn Health and Interventions in Vietnam:

Towards the Development of a Newborn Health Action Plan

September 2006



Save the Children

USA

TABLE OF CONTENTS

	Page
1. Introduction	3
2. Newborn Health in Vietnam	4
2.1. Epidemiology: Mortality and Morbidity	4
2.2. Maternal and Child Health Care System in Vietnam	6
2.3. Policies, Stakeholders, and Financing	8
2.4. Human Resources, Guidelines, and Training	10
2.5. Essential Supplies and Equipment for Newborn Care	12
3. Specific Newborn Health Interventions	13
3.1. Clean and Safe Delivery	13
3.2. Essential Newborn Practices Immediately After Delivery	15
3.3. Breastfeeding	17
3.4. Prevention and Management of Low Birth Weight	17
3.5. Prevention of Mother to Child Transmission of HIV/AIDS	19
4. Strategies to Improve Neonatal Survival	21
4.1. Policy	21
4.2. Service Delivery: Facility-Based Clinical Care	23
4.3. Service Delivery: Outreach	24
4.4. Service Delivery: Family-Community Care	25
4.5. Monitoring and Evaluation of Progress	25
Case Study: Neonatal Care in Vinh Phuc Province	26
Annexes	31
References	37

I. INTRODUCTION

Known as the neonatal period, the first 28 days of life are when newborns are most vulnerable. Globally, an estimated 4 million deaths occur every year during this critical time period, accounting for 37% of all deaths of children under 5. Of these deaths, 2.8 million (70%) take place during the first week of life (the early neonatal period), and 1.2 million (30%) occur between the 8th and 28th days of life (the late neonatal period). More than 40% of neonatal deaths take place within 24 hours after delivery.

The main causes of neonatal death are asphyxia, low birth weight/preterm, and infections (1). Most deaths in the early neonatal period are related to risk factors during pregnancy and delivery, while most deaths in the late neonatal period are due to infections. In countries where child deaths from common diseases such as pneumonia and diarrhoea have decreased, the contribution of neonatal mortality to under-five mortality is increasing (1). Neonatal morbidity and disability caused by birth asphyxia, congenital malformations, severe jaundice, and infections represent a significant burden for health services and communities (2). In addition to neonatal deaths, 0.5 million maternal deaths and 3.3 million stillbirths occur every year.

While the burden of neonatal mortality and morbidity is high, effective interventions exist that can be implemented even in settings with limited resources. These effective interventions are summarized in Table 1 (3). In order to decrease mortality and morbidity of newborns in Vietnam, the government of Vietnam has decided to improve the coverage of required neonatal interventions. This paper was developed to introduce prioritized interventions which are relevant to newborn care in Vietnam.

Table 1. Effective newborn health interventions

<p><u>Antenatal care</u></p> <ul style="list-style-type: none">- Tetanus toxoid immunization- Counseling on nutrition, birth preparedness and breastfeeding- Iron, iodine and folate supplementation- Identification of major risks of obstructed labor- Prevention and treatment of syphilis and malaria- Voluntary counseling and testing for HIV <p><u>Labor, delivery and the first 1-2 hours of life</u></p> <ul style="list-style-type: none">- Clean and safe delivery- Temperature maintenance- Immediate and exclusive breastfeeding- Cord and eye care- Emergency obstetric care for complications- Antibiotics for premature rupture of membranes*- Neonatal resuscitation*- Management of newborn complications*- Prevention of mother to child transmission of HIV* <p><u>Newborn care (from 1-2 hours to 4 weeks)</u></p> <ul style="list-style-type: none">- Exclusive breastfeeding- Temperature maintenance- Cord care and hygiene- Recognition of danger signs and prompt care seeking- Counseling on birth spacing- Special care for small newborns (Kangaroo care)*- Prevention of mother to child transmission of HIV*- Management of complications, serious infections, severe jaundice and very low birth weight newborns*- Follow up of newborns <p>Note: All interventions should be available for all pregnant women and newborns except those marked *, which should be provided only for illness or complications.</p>

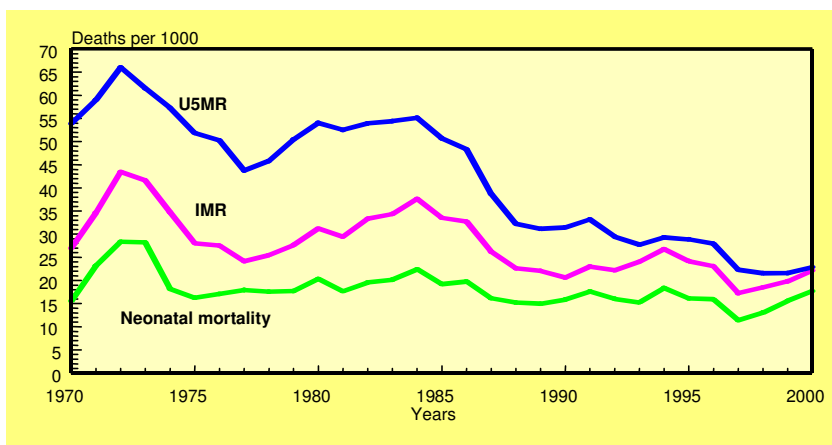
2. NEWBORN HEALTH IN VIETNAM

2.1 Epidemiology: mortality and morbidity

In Vietnam, a systematic maternal and perinatal death review mechanism is not being implemented. The following mortality data is derived from the Demographic Health Survey, the Health Nutrition Population and Poverty Survey, and small-scale research.

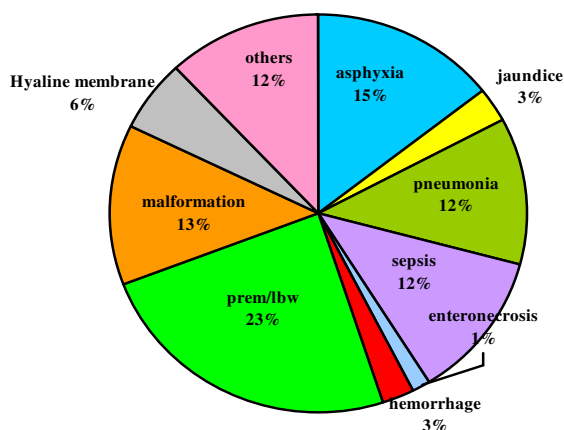
The **trend of child mortality** shows that the under five mortality rate has dropped considerably over the last thirty years (55/1000 to 30/1000), while the infant mortality rate has stayed the same (27/1000). The neonatal mortality rate was also unchanged, remaining in the range of 15/1000 (4). For example, a household survey in Ba Vi district in northern Vietnam (see figure 1) shows a decline in under five mortality as well as steady neonatal mortality (5).

Figure 1: Mortality trend in Ba Vi district 1970 – 2000 (5)



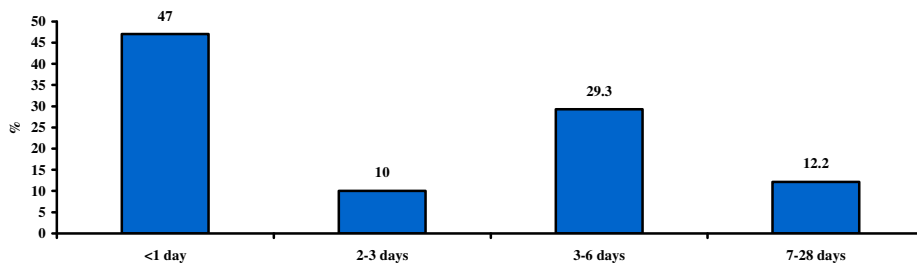
A survey carried out in 7 central-level pediatric hospitals and 10 provincial hospitals (figure 2) shows that prematurity/low birth weight is the **major cause of mortality** in newborns; other important causes include asphyxia, pneumonia, sepsis and malformation (6).

Figure 2: Causes of neonatal mortality (6)



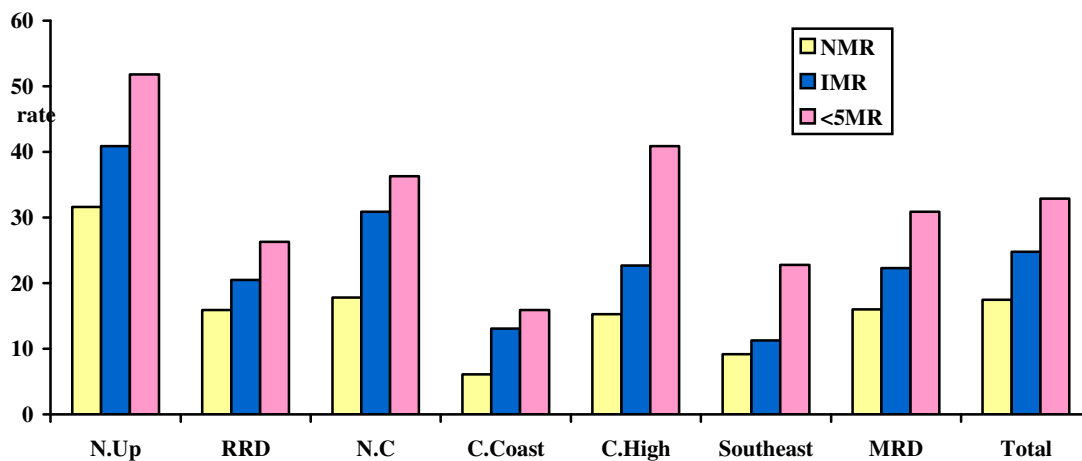
Neonatal mortality among facility-based deaths according to **specific time intervals** (see figure 3) shows 2 peaks: < 24 hrs and 3-6 days old (6).

Figure 3: Percentage of overall neonatal mortality according to time of death (6)



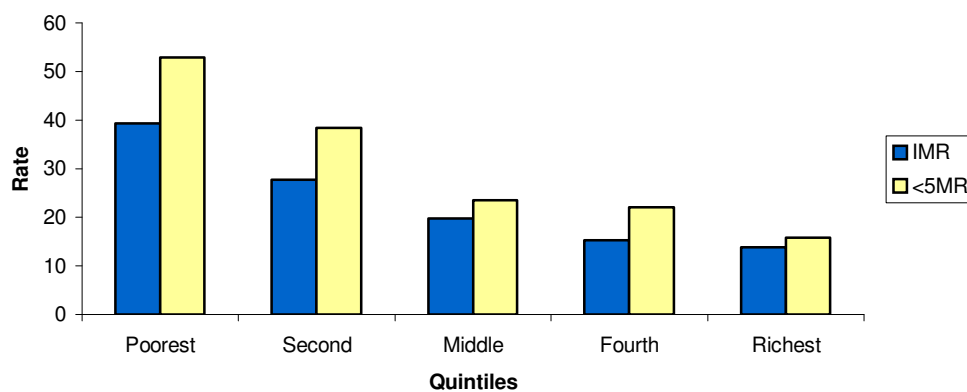
Child, infant, and neonatal mortality differentiated according to **geographical areas** (see figure 4) shows considerably higher mortality rates in disadvantaged, isolated mountainous regions such as the Northern Uplands, North Central and Central Highlands (4).

Figure 4: Child, infant and neonatal mortality rate according to geographical variations (4)



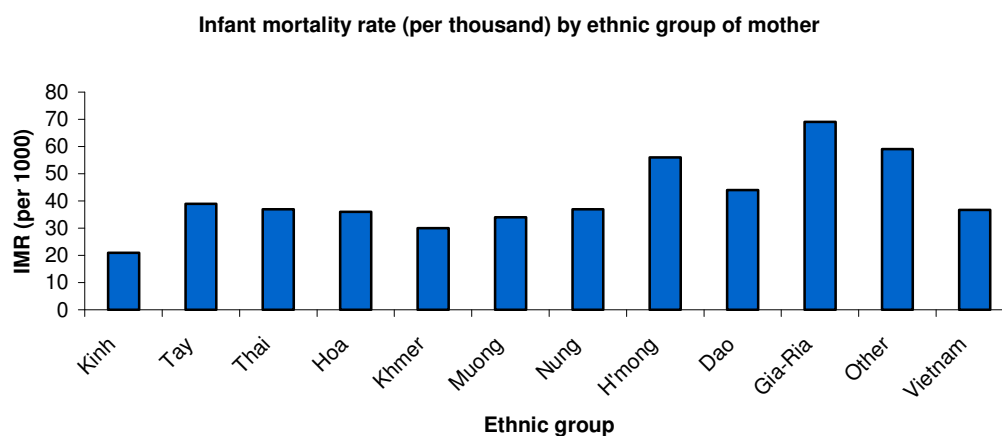
Child and infant mortality differentiated according to **socio-economic differences** in health status (see figure 5) shows that mortality is inversely proportionate to socio-economic status (7).

Figure 5: Child and infant mortality rate specified by quintiles of wealth (7)



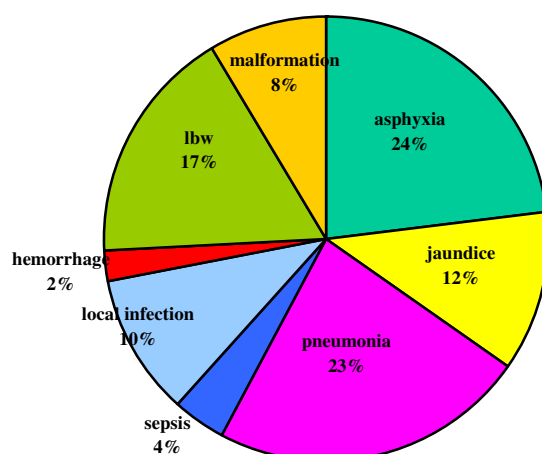
Infant mortality differentiated by **ethnicity** (see figure 6) shows substantial differences between the Kinh majority and ethnic minorities (8).

Figure 6: Differentials by ethnicity, only available for IMR (8)



The same facility-based survey, which assessed neonatal mortality, also examined the **morbidity pattern** among newborns (see figure 7) and concluded that sick newborns admitted at hospitals suffer mostly from pneumonia, LBW, jaundice, local infections and malformation (6).

Figure 7: Causes of neonatal morbidity for newborns admitted at hospitals (6)



2.2 Maternal and child health (MCH) care system in Vietnam

2.2.1 Existing public MCH services

In general, the health care system in Vietnam consists of 4 levels: central, provincial, district and commune.

Ministry of Health (MOH):

At central level, the Reproductive Health Department (RHD) in the Ministry of Health is responsible for MCH in the areas of 1) policy development, 2) development and supervision of national guidelines and 3) collaboration with different departments within MOH. The department consists of four large sections: a) maternal health, b) adolescent health, c) child and neonatal health and d) family planning services. It is headed by 1 director with 2 deputy directors in Hanoi and 1 deputy director in Ho Chi Minh City.

Other departments in MOH which play an important role in MCH are 1) Therapy department, which is mainly working in the area of clinical health care and supervising provincial and district hospitals, 2)

Preventive department, which is responsible for preventive centers at provincial and district level, 3) Science and Training department, which is in charge of training content of medical and secondary medical schools and 4) Planning department, which is overseeing the overall planning of MOH.

Central hospitals and institutes:

Throughout the country, specific hospitals are appointed to assist MOH to disseminate guidelines as well as to train and follow-up on health workers. These central hospitals include the National Pediatric Hospital (NPH) and National Obstetrics & Gynecology Hospital in Hanoi and Children's Hospital no.1 and Tu Du Hospital in Ho Chi Minh City. Collaborating institutes in the area of MCH include National Institute of Nutrition (NIN) and National Institute of Hygiene and Epidemiology (NIHE).

Provincial level:

At provincial level, provincial health services include 1) Provincial hospitals, 2) Provincial Maternal and Child Health/Family Planning (MCH/FP) centers and 3) Provincial Preventive Health Centers. Responsible staff for MCH care includes public health specialists, general doctors, pediatricians, obstetricians and midwives. However, a neonatal unit is not always available at provincial hospitals. The MCH/FP center advises, trains, supervises, manages and implements MCH care and family planning in the province. Collection of data from districts and communes takes place on a monthly basis and report to the Reproductive Health Department every quarter. At all levels, crosschecking of health facilities takes place yearly using standardized checklists in order to maintain quality.

District level:

At district level, district health centers exist including 1) District hospital and 2) District Preventive Health team and 3) District MCH/FP team. In all district hospitals, an obstetrician is available, but a pediatrician is often lacking. The district MCH/FP team consists of a public health specialist, general doctors, obstetricians and/or midwives and nurses. The tasks of MCH/FP team include supervision of the Commune Health Station, family planning and abortion at community level, provision of antenatal care, and collaboration with other teams such as EPI outreach.

Commune level:

Primary healthcare and outreach is delivered by commune health stations (CHS) staffed by doctors, assistant doctors, primary nurses, and midwives. MOH data from 2003 (9) show that a doctor was available in only 65% of CHS. By June 2003, there were 10,689 communes (all of which were staffed with health professionals), 97% of which have a CHS. For the remaining 3%, the health staff worked out of their private homes or at the commune People's Committee (9). Midwives are mainly trained in delivery with only limited trainings in newborn care. Mobile teams responsible for outreach services cover family planning education, nutrition, and immunization. These teams visit households approximately once a month. Village health workers (VHWs) are present in especially mountainous and remote areas to 1) deliver health education, 2) detect and report epidemics, 3) perform ANC and monitor the development of pregnancy, 4) perform normal deliveries and detect abnormal pregnancies for prompt referral to higher levels, 5) assist in all primary health care programs and 5) manage certain common diseases. VHWs are trained from 3-9 months and work under the close supervision of management of CHS.

2.2.2 Access and utilization of public MCH services

In Vietnam, access to and utilization of health facilities are relatively high, but large disparities still exist. Factors influencing access and utilization of healthcare include 1) distance and time to health services, 2) ability to pay, 3) education, 4) culture and 5) quality of care.

Geographical access is measured in distance and time to a health facility, and these indicators are worst in the North West Mountains and Central Highlands. For most women, the CHS is the closest facility providing MCH services (4). More than 8 out of 10 women (86%) live within 5 km of a facility offering MCH services, with 40% of married women aged 15-49 within 1 km and another 46% 1-4 km from such a facility.

The distribution of children under 36 months by distance to the nearest health facility shows that 81-89% of children live within 5 km of immunization services, 81-92% live within 5 km of ORS treatment for diarrhea, and 76-91% live within 5 km of treatment for cough. At least 75% of children live within 5 km of a facility that provides child health services (4).

Economic access or ability to pay is another factor which is becoming much more critical after the introduction of user fees in 1989. Studies carried out in rural areas show that there is a tendency among the poor to postpone seeking care at public health services because of less ability to pay and higher transportation costs.

Education also plays an important part in access and utilization of basic health care services. Evidence shows that individuals with more schooling are more likely to access health services than individuals with no schooling, especially in relation to children's health services. Educated mothers seek faster care for their children than mothers with less or no schooling.

Traditional customs and practices may be carried out before seeking healthcare at a health facility, which may lead to a delay in healthcare seeking behavior as well as possible complications for the mother and newborn.

Quality of care is another important factor in healthcare seeking behavior and is central to the health of the whole community. Quality of care depends mainly on the training and attitude of health professionals and the availability of drugs and equipment. Especially at lower level health facilities, health professionals are not specifically trained in providing care for newborns.

Figures regarding healthcare seeking behavior of sick newborns are not available. The closest estimate used here is the treatment seeking behavior at health facility/providers of care for children below 35 months with symptoms of ARI, which is 71.3% (4). This differs between regions, geographical areas (rural/urban), and education of the mother. Among pregnant women, 87% seek ANC, and 79% deliver at a health facility (4). The private sector has grown rapidly in recent years, offering more choices to the population. The proportion of children under 5 seen at public and non-public health facilities depends on the type and place of care (10):

	Urban		Rural	
	Public*	Non-public**	Public*	Non-public**
Preventive care	92.9%	7.1%	96.6%	3.4%
OPD service	45.4%	54.6%	58.2%	41.2%
OPD treatment	24.6%	75.4%	37.9%	62.1%
Consultation after hours	15.1%		70.5%	

*Public includes: VHWs and public health facilities

**Non-public includes: both modern and traditional medicine; private hospitals, clinics, and practitioners

2.3 Policies, stakeholders, and financing

2.3.1 Policies

Several policies exist which focus on areas related to newborn health but do not specifically target newborn health. The overall strategy for the improvement of health in Vietnam is *The Strategy for People's Health Care and Protection, 2001 –2010* adopted by the Prime Minister in decision No. 35. The *Comprehensive Poverty Reduction and Growth Strategy (CPRGS)* was approved in 2002 and includes maternal and neonatal targets such as: 1) reduce IMR to 30/1000 by 2005 and 25/1000 by 2010, 2) reduce low birth weight children to 7% by 2005 and 5% by 2010, and 3) reduce MMR to 80/100,000 by 2005 and 70/100,000 by 2010. One of the 6 National Target Programs to support MOH in improving health in Vietnam entitled *National Target Program on Reproductive Health (2006-2010)* has been submitted to the government for approval.

The *National Strategy for Reproductive Health Care 2001-2010* ratified by decision No. 136 has as its overall objective to improve the overall reproductive health status and narrow the gap between regions and target groups. The strategy includes seven objectives of which one states: "To improve the health status of women and mothers and to obtain a more even reduction in maternal mortality and morbidity, perinatal deaths, and infant mortality among different regions and target groups, with specific attention to disadvantaged areas and to beneficiaries and government policies."

In order to implement this strategy, a *National Plan on Safe Motherhood (2003-2010)* was developed. Targets for MCH/FP by 2010 include: reduce infant mortality to 25/1000, reduce peri-natal mortality to 18/1000, reduce low birth weight to 6% and reduce maternal mortality rate by 50%. This plan consists of 2 phases: Phase I: 2003-2005 focuses on activities at the central level and pilots different implementation

models in selected districts. Phase 2: 2006-2010 includes expansion of activities to other provinces dependant on the financial capacity of MOH and donors. Phase 1 is supported by the Safe Motherhood project (P21): 2003-2006, which is being implemented by MOH/RHD in collaboration with UNFPA, with technical support from Save the Children/US, PATH and WHO and funding from the Royal Dutch Embassy. Preparations of Phase 2 are ongoing.

As a follow-up to the *National Plan of Action of Nutrition (1995-2000)*, a *National Nutrition Strategy, 2001-2010* was formulated which touches upon malnutrition in newborns as well as breastfeeding. The National Institute of Nutrition (NIN) coordinates the implementation of the National Nutrition Strategy. Based on this strategy, the *Master Plan for Nutrition, 2004-2008* was formulated. A *Plan of Action for Infant and Young Child Feeding 2005-2010* and the *Prevention of Mother To Child Transmission (PMTCT) Plan of Action* are currently under development.

MOH first introduced an IMCI directive in 1999 that contains some interventions for newborn care. In 2000, the government issued Decree No. 74 on the marketing and use of breast milk substitutes to protect and promote breastfeeding, which is now under revision. Recently in 2003, directive no.4 on newborn care was adopted but assessment of the implementation has not been carried out.

For a more detailed list of policies, plans, decrees, directives, see annex I.

2.3.2 Stakeholders

A steering committee on 'Safe Motherhood and Newborn Health' was established in 2003 and is being led by the Vice Minister with members from MOH's department leaders. The purpose of this committee is to manage the Safe Motherhood Project and the National Plan on Safe Motherhood in Vietnam. The Project Management Board is led by RHD and consists of representatives of different MOH departments and directors of provincial hospitals. The steering committee is technically supported by National Technical Backstopping Group for Safe Motherhood and Newborn Care, headed by RHD including experts in Ob/Gyn, nutrition, HEC as well as those from (I)NGOs and UN agencies.

Established in 2004, the steering committee on 'Neonatal and Child Health' is led by Vice-minister and includes several MOH department leaders. The secretariat providing technical guidance is RHD.

A 'National Steering Committee for Breastfeeding' has been established including representatives from various departments in MOH. While the committee is involved in organizing activities to advocate for exclusive breastfeeding such as Breastfeeding Week, it only meets very infrequently.

The Subcommittee for Protection of Mothers and Newborns under the Commission for Prevention of HIV/AIDS of the MOH was established in 1995. This Subcommittee is responsible for developing an action plan and a financial plan for each year and for giving guidance on and organizing the implementation in the following areas: 1) prevention of HIV transmission from mothers to their newborns, 2) health care for mothers and children infected with HIV, and 3) inspection and evaluation of activities undertaken by the localities in this field. Each province sets up a Subcommittee for Protection of the Mother and the Child. Moreover, the Health Committee and the Maternal Department at district and province levels also have the duty to see to the prevention of HIV transmission from mothers to their newborns.

The Reproductive Health Affinity Group was established in 2000 to support the policies and strategies of the government of Vietnam in developing the reproductive health subsector and to maximize the efficiency and effectiveness of development assistance in improving reproductive health in Vietnam. Its members include (I)NGOs, UN agencies, the government and donors. This group is contains 2 working groups: 1) the Safe Motherhood and Newborn Health Group and 2) the Reproductive Health Affinity Group on Youth.

2.3.3 Financing

Economic reforms introduced in Vietnam in the late 1980s have led to a shift from a publicly financed health system to one with predominantly private financing. In 2000, the share of public financing was 28.5 percent, while the private share amounted to 71.5 percent. The Government budget for health care is allocated in two ways. First, national programs are funded vertically and directly allocated from the central

level. Second, as a result of the decentralization process, the central Government transfers block grants to the provinces. After consultations with different sectors, the Provincial People's Committee decides the amount that each sector will request. The provincial health bureau then allocates its share to the provincial, district, and commune health facilities.

Children under six have theoretically been exempted from paying user fees, but this commitment has previously not been backed up by financial resources, so providers have often felt obliged to charge user fees for services provided to children under six. However, with the new Law on Child Care, Protection and Education effective from January 1, 2005, the Government has earmarked about 5USD per year to reimburse public health facilities for healthcare provided to children under six. This is an encouraging sign of Government commitment to child health and should lead to increased access to, and utilization of, health services for children, particularly for poor and ethnic minority children.

2.4 Human resources, guidelines, and training

2.4.1 Human resources

Before the issuance of directive no. 4 on newborn care, most sick newborns were treated together with children in pediatric departments of provincial hospitals and specialty hospitals. After the directive which included provisions to create neonatal departments/units, information collected by Tu Du Hospital covering 36 southern provincial hospitals reported that while a neonatal department existed in 6 hospitals and a neonatal care unit was initiated at the pediatric department in 20 hospitals, there were no neonatal departments/units available in the 10 remaining hospitals. At five hospitals, newborn care was carried out by the obstetric department and at five other hospitals, newborns and children were treated together (11).

In general, human resources in the area of newborn care and pediatrics are lacking. General doctors or untrained persons often provide care for newborns. Many cases are treated in an improper manner and referred to higher-level hospitals, which results in high neonatal mortality. A report from Children's Hospital No. 1 in HCMC covering 16 provinces in the south recorded that 43.75% hospitals lack sufficient skilled health workers and doctors to treat and follow up on newborns 24 hours per day (12). In most of these hospitals, mechanisms for collaboration and coordination between pediatricians and obstetricians is lacking.

Skilled attendance varies by level of health facility and by tasks. Assessment of service provider's skills during antenatal check-ups shows a great weakness in counseling (13, figure 8).

2.4.2 Guidelines

The *National Standards and Guidelines for Reproductive Health Care Services* (NSGRH) were developed in 2003. This document is divided into 6 parts, including one on Safe Motherhood which addresses the following newborn care issues: care of healthy newborns, premature/low birth weight newborns, and newborns with deformities; counselling on breastfeeding; care of mother and newborn during the first day/first week/first 6 weeks. Important issues related to newborn care which targets the mother include improving maternal health and nutrition (food, maternal leave, iron, acid folic), screening for HIV and syphilis in facilities where this is possible, and intermittent presumptive treatment (IPT) with chloroquine during pregnancy.

Standards of clean birth kits are included in the 'National List of Medical Equipment' for Community Health Stations.

Among the nine steps of ANC, three activities including obstetric examination (87.3%), vaccination (64.9%), and general examination (62.3%) were commonly performed, and tests (24.8%), including blood, urine, and HIV, were not often conducted.

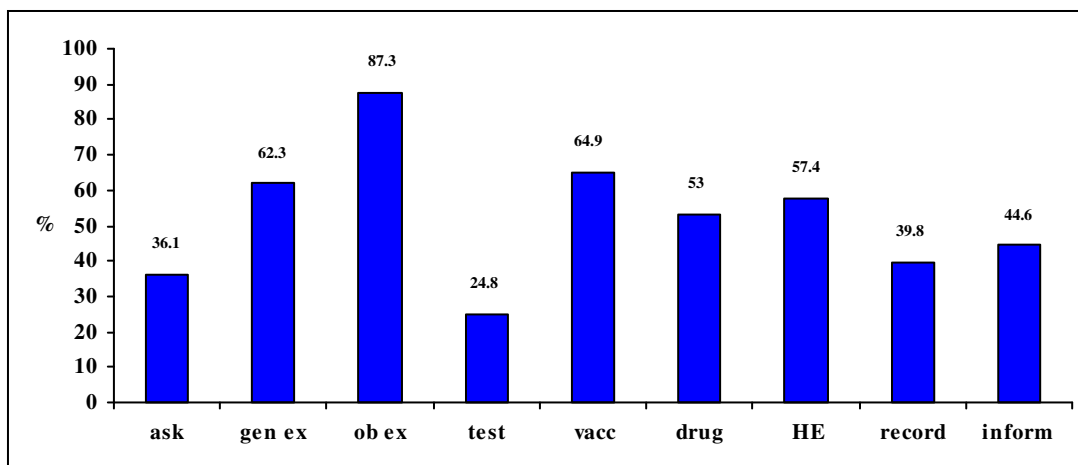


Figure 8: All 9 steps with detailed operations as defined in the National Standards were employed during on-site observations to assess service providers' skills during antenatal check-ups. Mean scores per 100 were calculated for each step at different levels. The figures in this chart are the total means (13). (Ask = anamnesis, gen ex = general examination, ob ex = obstetric examination, test = testing, vacc = vaccination, drug = essential drugs, HE = health education, record = recording, inform = giving information to patient)

The following WHO IMPAC reference guidelines have been translated into Vietnamese: 1) "Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice" (which includes certain sections related to newborn care) and 2) "Managing Complications in Pregnancy and Childbirth." A third manual "Managing Newborn Complications: A Guide for Doctors, Nurses and Midwives" is currently being translated. Additionally, "WHO's Practical Guide for Kangaroo Mother Care" was published in Vietnamese in 2003.

General guidelines have been developed regarding treatment to prevent HIV transmission from mother to child (preventive treatment before and during delivery, techniques of delivery, post-delivery treatment to mothers and newborns, ending of pregnancies). These guidelines are being updated to recent developments in HIV/AIDS. Guidelines on HIV & infant feeding are also under development.

2.4.3 Training (See table 2)

At the commune level, IMCI training covers case management of sick newborns from 1 week up to 28 days of life. IMCI is a topic in both in-service and pre-service training for commune health staff. A Young Infant (0-2 months) IMCI evaluation study will be carried out in Vietnam in 2006.

Training on *The National Standards and Guidelines for Reproductive Health Care Services* is being carried out through UNFPA P10 and covers the neonatal sections included in the guidelines. Under the UNFPA P21 Safe Motherhood Initiative, a 5-day neonatal care training is conducted using WHO's reference manual "Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice." In addition, Save the Children/US has developed training materials on essential care for newborns which have been used for the training of health workers in one province.

Under the P21/SMI training on Safe Motherhood, Client Oriented Provider Efficiency (COPE) and Information Education and Communication/Behaviour Change Communication (IEC/BCC) is being carried out. Development of Emergency Obstetric Care using the reference manual "Managing Complications in Pregnancy and Childbirth" is ongoing.

The Protein Energy Malnutrition (PEM) program is being implemented nationwide and includes activities such as the training of mothers, the establishment and training of nutrition collaborators, Information Education and Communication, food demonstrations, and growth monitoring. A four day breastfeeding counselling course has been introduced into the curriculum of all secondary medical schools. Established in 1995, the Baby Friendly Hospital Initiative (BFHI) has acknowledged 53 out of 109 provincial hospitals and 4 out of 568 district hospitals as baby friendly hospitals.

The following table presents topics which are used in pre-service and continuous trainings for different levels of health staff.

Table 2: Maternal and neonatal health related subjects that are included in continuous or pre-service education for each category of staff

Category of Staff	Level of Activity		Observations
	Continuous	Pre-Service	
Policy Maker			COPE: Safe Motherhood Initiative developed a Client Oriented Provider Efficiency training package IEC/BCC: Safe Motherhood Initiative developed a IEC/BCC package EOC: using IMPAC Managing Complications in Pregnancy and Childbirth BF: BFC course SM/NBC: Safe Motherhood Initiative developed a Safe motherhood and newborn care training package
Manager	COPE IEC/BCC		
Public Health Practitioner	EOC BF IEC/BCC		
Physician – Specialist	SM/NBC EOC/ IMPAC BF IEC/BCC		
Physician – General Practitioner	SM/NC EOC/ IMPAC BF IEC/BCC		
Nurse	SM/NC BF IEC/BCC	BF	
Midwife	SM/NC PCPNC BF IEC/BCC	BF	

2.5 Essential supplies and equipment for newborn care

Results from surveys and reports show that necessary supplies and equipment for both basic and comprehensive neonatal care are not up to standards.

- a) **Delivery room:** 12.5% of delivery rooms in provincial hospitals were not equipped with resuscitation bags or endo-tracheal tubes in newborn size. Essential equipment such as clocks with a second hand were only present at 66.5% of hospitals. 21.9% of delivery rooms of health centers were appropriately equipped with resuscitation equipment (13).
- b) **Units for newborn care:** A sick neonate room was present only in 31 of 44 provincial hospitals (14).
- c) **Drugs:** Availability of essential drugs was high. 95% of hospitals had all essential drugs except for Phenobarbital, which was lacking at some hospitals (14).
- d) **Basic equipment:** A heating device was available in all 7 central hospitals, in 33/44 provincial hospitals and 329/453 district hospitals (14). UNFPA's baseline survey shows that 40.6% of health facilities were able to perform blood glucose testing, and standard respiratory resuscitation and pleural drainage procedures in emergency situations were not available in the majority of the assessed hospitals (13).
- e) **Comprehensive equipment:** Most comprehensive equipment such as an incubator, photo-therapy, CPAP and blood transfusion were of high quality at central pediatric hospitals; however, they were not up to the standards in provincial and district hospitals (14). An UNFPA survey shows that only 28% of provincial hospitals can perform ultrasound for newborns (13).

Lack of comprehensive equipment is most common in district hospitals than in provincial and central pediatric hospitals.

	7 central pediatric hospitals	44 provincial hospitals	453 district hospitals
Incubator	7/7	30/44	86/453
Photo therapy	7/7	22/44	27/453
CPAP	3/7	9/44	9/453
Blood transfusion	4/7	3/44	9/453

3. SPECIFIC NEWBORN HEALTH INTERVENTIONS

Among newborn health interventions, the following will be discussed in detail: clean and safe delivery, immediate care of newborns after delivery (cord and eye care, neonatal resuscitation, temperature maintenance), immediate and exclusive breastfeeding, management of very low birth weight newborns, and prevention of mother to child transmission of HIV.

3.1 Clean and safe delivery

The most recent estimate of Maternal Mortality Ratio (MMR) in Vietnam is 165/100,000 live births (15); however, this figure varies significantly per area. Major disparities exist with a wide range between 45-411/100,000 live births. According to the same study which covered 7 provinces, these maternal deaths are caused by 6 key factors: hemorrhage (40%), eclampsia (21%), infection (17%), unsafe abortion (12%), ectopic pregnancy (5%) and uterus rupture (5%). As stated above in the introduction, the majority of neonates die during the first 24 hrs after birth due to risk factors related to pregnancy and delivery.

According to VDHS 2002, almost 80% of women deliver at health facilities and are assisted by a midwife or doctor; the remaining 20% deliver mostly at home and are assisted by a trained TBA or an untrained relative/other, the latter accounting for 10% of all deliveries (4). These are general figures and large disparities do exist. For example, untrained persons assist in about 40% of home deliveries in lowland and mountainous areas such as Central Highlands (16). According to the report from the National Hospital of Obstetrics and Gynecology, home deliveries in 26 provinces in the north have steadily decreased from 13.8% in 2002 to 10% in 2003 and to 9% in 2004 (17). Reasons for home delivery include long distances to the closest CHS, lack of money, impossible for family member to accompany the mother, and traditional attitudes in which delivery is approached as a normal event to be managed at home (18).

3.1.1 Infection control

A survey carried out by IMCI and Children Hospital No 1 in April 2003 at 3 southern provincial hospitals (12) indicated that infection control in both the obstetric and pediatric department was insufficient. Among 6 surveyed departments, five departments had weak infection control procedures and one department had average levels. Issues recommended for improvement included re-organization of departments and patient rooms, better human resource (nurses) ratio per newborn, infection prevention regulations and procedures for staff and equipment, and designation of specific staff for infection prevention.

In collaboration with the national obstetric association, MOH developed “4 clean rules” (19):

- Clean delivery room, table, and environment
- Clean equipment
- Clean woman
- Clean health staff

Clean delivery room, table, and environment

Over the last decade, delivery rooms have been upgraded at all levels (province, district, and commune). Even in mountainous areas, CHSs are built according to required standards; however, a certain proportion of health facilities in the country still need to be renovated.

Clean equipment

Most primary healthcare centers are only able to carry out dry sterilisation of instruments. According to a survey conducted in 12 provinces, a wet steriliser is present in 48% of CHSs, and a dry steriliser is present in 37.3% of CHSs (16). Even if equipment is available, there is a lack of financial resources to fund electricity, gas or firewood and sometimes the temperature of a dry steriliser cannot be measured.

Another obstacle is lack of knowledge among health workers in how to use a steriliser and how to keep the instruments sterile.

Clean woman

While pregnant women are advised to bathe at home before going to a health facility for delivery, they are not advised to bathe immediately before delivery. In tertiary provincial hospitals and some district hospitals, women are provided with clothes but in almost all CHSs, women wear their own clothes. Enema and taking out the vulva hair is no longer done. Cleaning the vulva with boiled water before examination is not always performed in accordance to the National Standards and Guidelines for Reproductive Health Care (16).

Clean health staff

Many health staff do not know the difference between routine hand washing and operational hand washing. Almost all health staff do not wash their hands before wearing gloves. One fifth of health facilities do not have enough clean water for healthcare. Sterilised towels to dry hands are not always available, especially at district hospitals and CHSs (16).

3.1.2 Care during labour

The NSGRH recommends use of partograph, but in reality, not all staff follow this practice due to two reasons. Firstly, there is a lack of awareness among the health staff in the importance of a partograph, and secondly, there is not a standardised form. In general, health staff focus on the technical part of the delivery and lack knowledge to provide psychological support (13).

The baseline survey carried out by UNFPA (2003) in 12 provinces (13) shows that only 1.4% of CHSs met the criteria for basic essential obstetric care (administration of parenteral antibiotics, anti-convulsants, and oxytocics; performance of manual removal of placenta; retention of products; assistance in vaginal delivery). CHSs rarely administered parenteral anticonvulsants which may reflect early referral of women with signs of pre-eclampsia. Comprehensive obstetric care (performing caesarean section and blood transfusion) is only implemented by 52.2% of provincial and 45.8% of district health facilities.

3.1.3 Care of mother after delivery

While health workers have been trained in NSGRH, they still do not perform certain important steps such as measurement of pulse and blood pressure immediately after delivery, checking of genital trauma, and regular check-up of mother. According to the baseline study carried out by UNFPA in twelve provinces (13), Expressed in attained mean of national standards, 92.2% of service providers at provincial level have knowledge on neonatal care <24 hrs after delivery, while knowledge of providers at district and commune levels are equally high: 93.6% and 84.8% respectively. Service provider's knowledge of correct action regarding abnormal signs during post-partum expressed in attained mean of national standards was much lower: 72.3% at provincial level, 57.4% at district level, and 59.8% at commune level.

As a national policy, one high dose (200,00 IU) of vitamin A supplementation is supposed to be given to every woman 4-6 weeks post-partum to prevent Vit A deficiency in both mother and infant. Reported coverage of this intervention varies from 80% from routine data to 68% in the NIN survey.

3.1.4 Traditional practices

Certain traditional practices, especially in rural, mountainous, and remote areas, still exist which may be harmful for both mothers and newborns. These practices can cause obstetric complications and threaten the lives of newborns. In mountainous areas of Central Highlands, some minority groups still construct tents in remote forest for pregnant woman to deliver on her own and do not want to deliver at the CHS. A study in Quang Tri and Can Tho (20) shows that women are not often prepared for their delivery and do not even know their expected delivery date; only when labour pains begin do they realize that they are about to deliver. Traditionally, the delivery takes place close to home without any preparation for transporting the woman to a healthcare facility. In case of an emergency, neighbours usually prepare a stretcher to transport the woman or newborn by foot or by bicycle to the nearest health center. In the highland areas of Vietnam, the main instrument for cutting the umbilical cord of newborns is the bamboo blade. Very few women use a fresh bamboo blade, because an old and dry bamboo blade is much sharper.

3.2 Essential newborn practices immediately after delivery

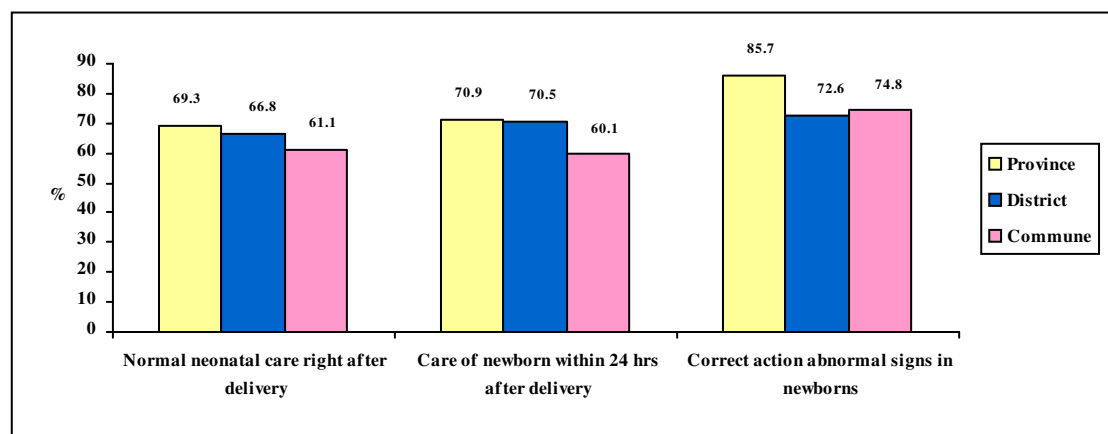
3.2.1 Skin, cord, and eye care and Vitamin K1 injection

Standard care for healthy newborns after delivery includes drying and keeping the newborn warm; breastfeeding; newborn check-up, skin, cord and eye care; vitamin K1 injection; and immunization (21). In Vietnam, proper practice of standard newborn care is still inadequate. Figure 9 shows that health providers' knowledge on routine immediate neonatal care, routine care within 24 hrs after delivery, and care in response to abnormal signs expressed in attained mean of national standards lies between 60-85% in district healthcare workers and lower for commune workers. Service provider's practices of post-natal care immediately after delivery expressed by attained mean of national standards were 72.6 at province level and 70.4 at district level. These practices include the national standards which were most often omitted such as cleaning of eyes and injection of vitamin K (see figure 10).

At health facilities, routine skin, cord, and eye care practices are still not performed according to the standard. WHO recommends that routine cord care entail leaving cord uncovered without application of antiseptic drugs, but most health facilities apply 90% concentrated alcohol to the cord and dress it with gauze. A study of 102 newborns with cord infection admitted to Children Hospital No. 1 concluded that cord infection was due to unclean care (dirty instruments, no hand washing), improper care, and cord covering (22). A study of cord care practice among 299 newborn newborns in Tra Vinh Provincial Hospital from June 2000 to September 2001 (22) concluded that there was no significant difference in cord infection rates between the group treated with 70% alcohol with dressing and the group treated with normal saline without dressing. In practice, only a minority (37.5%) opted for the uncovered routine cord care (22).

Vitamin K1 prophylaxis is recommended in the NSGRH, but implementation is very limited. According to the 12 provinces baseline survey, only 24.5% of health centers routinely gave vitamin K1 to newborn (13). A study on the incidence of intracranial hemorrhage (ICH) due to lack of vitamin K in infants 8-12 weeks old in 7 Hanoi hospitals (23) shows an incidence rate of 116/100,000 live births (142/100,000 cases in rural versus 81/100,000 in urban areas). One in 10 (9%) of these infants died, and four in ten (42%) of the survivors were assessed as neurologically abnormal at the time of discharge. The National Hospital of Pediatrics had similar results; it admitted 150-200 cases of ICH yearly between 2001 and 2003, of whom 14.7% died and 34% of survivors were discharged with sequelae. In the southern region, the burden of ICH has decreased, probably because most provincial hospitals give Vitamin K1 after birth (24). Children's Hospital Number 1 in HCMC admitted 95 cases in 1998 (of whom 3 died) and only 12 cases in 2003 (of whom 5 died).

Figure 9: Service provider's knowledge on normal neonatal care right after delivery, within 24 hrs after delivery, and of abnormal signs in newborns expressed in attained means of National Standards (13).

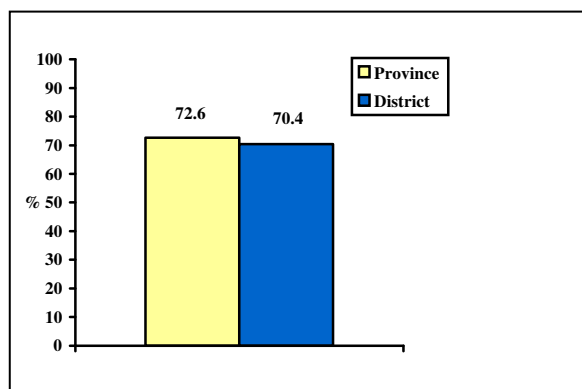


3.2.2 Management of asphyxia

Only limited information exists on the prevalence of asphyxia in newborns. In a report from Tu Du Hospital covering 32 provinces in the south, prevalence of asphyxia among admitted newborns was 13% at

Tu Du hospital, 5-10% at provincial hospitals and 0.5-1% at district hospitals. This data demonstrates that very few newborns with asphyxia are managed at commune/district level. After basic resuscitation, these newborns are often referred to higher levels.

Figure 10: Service provider's practice of postnatal care right after delivery. Expressed by attained mean of: 1) clear newborn's airway 2) dry and keep warm newborn 3) apply appropriate cord care 4) assess newborn's condition 5) clean eyes with sterile water and Argyrol drops 6) inject Vit K 7) return newborn to mother <30 min for initiation of BF (13).



Cross-checking supervision reports of CHSs in 36 provinces in the south show that supplies and equipment needed to appropriately resuscitate newborns such as resuscitation table, clean suction materials, oxygen, bags and masks for newborns are all lacking. Furthermore, knowledge and skills are weak in this area and the responsibility of resuscitation, especially advanced procedures, is given to anesthetists. Pediatricians are not routinely on call to assist when problems arise in newborns directly after delivery. The NSGRH include management of asphyxia, but basic resuscitation is not clearly addressed and the guidelines are not compatible with international guidelines on the resuscitation of the newborn. Harmful practices exist regarding the position of newborns during resuscitation and some health staff still slap the newborn's buttocks if it is not breathing.

3.2.3 Management of hypothermia

In Vietnam, the extent of hypothermia is unknown. Hypothermia is considered as a symptom rather than a disease and only very few studies on hypothermia in newborns are carried out, resulting in limited data. Existing data indicate that hypothermia is a critical problem related to neonatal morbidity and mortality. Results in a report by NHP in Hanoi (1998-2000) show that 65.9 % of low birth weight newborns and neonates with severe conditions were hypothermic when admitted to the special care unit. Hypothermia also contributes to neonatal mortality, as shown in a study on neonatal mortality within 24 hours after admission to the NHP. In this report, 32% of neonatal deaths were hypothermic on admission. Another study in Hai Phong province states that hypothermia contributed to 35% of early neonatal deaths (25).

Delivery rooms in many hospitals are not warm enough, and newborns are often left wet and uncovered during the third stage of labor. Field visits to 3 provinces (Can Tho, Quang Tri and Thua Thien Hue) showed that newborns were often washed soon after birth and were not immediately dried and wrapped until suctioning and cord care had been completed. Rapid heat loss in newborns is often augmented, because of the following reasons: ceiling fans focus directly on wet newborns, healthcare staff often weigh newborns naked, and newborns are kept in a nursery away from the warmth of its mother. Additionally, the initiation of breastfeeding is frequently delayed for many hours.

With an average of 20% of all births taking place outside of health facilities, there is a lack of awareness in home birth attendants on the importance of drying and wrapping the newborn immediately after birth. Certain traditional practices can cause hypothermia in the newborn such as sprinkling the newborn with cold water to stimulate breathing and bathing the newborn soon after birth. In Quang Tri province, one of the observed practices included ignoring the newborn until the mother's placenta is expelled in the belief that an undelivered placenta, especially if separated from the newborn, will go to the mother's heart and kill her. Therefore, the mother and attendants vigorously massage her abdomen to expel the placenta while the wet newborn lies on the floor.

3.3 Breastfeeding

3.3.1 Initiation of breastfeeding

As part of its breastfeeding promotion campaign, MOH advocates initiation of breastfeeding in the first hour after delivery. The rate of newborns breastfed within one hour of birth is actually 57% (26) with large variations between regions. In the Central Highlands, only 39% of newborns are breastfed within an hour after birth compared to 68% of newborns in the Northern Uplands. In a study conducted NIN and UNICEF (27), only 28% of mothers in Vietnam initiated breastfeeding within one hour of birth. Other newborns were given sugar water, cow's milk or honey. A study carried out in rural northwest Vietnam (28) found that 35% of all mothers put their newborns to the breast within one hour of birth, which is similar for exclusively breastfeeding mothers. Findings of a study carried out in Bac Ninh and An Giang provinces (29) revealed that while the younger generation seems to know that early initiation of breastfeeding is a good practice, a common belief among the older generation is that colostrum is not good for the newborn.

3.3.2 Exclusive breastfeeding for 6 months

In general, breastfeeding is a very common practice in Vietnam. Overall, 98% of Vietnamese children are breastfed for some period of time. Small variations in this behaviour are due to factors such as geographical region, mother's education, and place of delivery. At least 90% of every subgroup is breastfed (30).

Vietnam has adopted policies on exclusive breastfeeding during the first 6 months of life. The rate of exclusive breastfeeding differs per age group. In the 2002 VDHS, exclusive breastfeeding rates for infants less than 2 months old was 30.8%, from 2 to 3.9 months old was 12.1%, and from 4 to 5.9 months old was 7.7%, respectively. In the 1997 VDHS, these figures were 53.5%, 8.6%, and 1.3% respectively (31). This comparison shows that the exclusive breastfeeding rate of older infants increased. According to the NIN statistics in 2002, the rate of exclusive breastfeeding up to 4 months is 29.2%, which is similar to 1998.

A recent study (29) shows that it is a common practice for mothers to give newborns water or honey instead of breast milk to clean their mouths and to satisfy their thirst. Also ready-made milk (in powder or liquid form) and rice powder are often used to feed infants under 6 months.

Various explanations for these practices exist. In a study assessing the barriers to exclusive breastfeeding in Vietnam (28), only 24% of the mothers exclusively breastfed infants under 6 months, and the risk of not exclusively breastfeeding was 14.0 times greater for women who had returned to work than for women who had not. Counselling of health workers was another determining factor of exclusive breastfeeding. Insignificant variables included whether the mother felt she had enough milk, the total number of children the mother had, the mother's age and years of schooling, the child's sex, and socio-economic conditions.

Furthermore, recent studies (32) indicate that a majority of women are not really confident about the amount of milk in their breasts and are also not very clear about the importance of breastfeeding.

Factors contributing to successful exclusive breastfeeding include the avoidance of all foods and fluids except for breast milk, correct attachment and positioning at the breast, on-demand feeding, frequent (at least every three hours) feeding, and expressing milk when needed. Observations by UNICEF and MOH staff as well as international consultants (31,32) have shown that health worker's capacity in all those areas is not sufficient, even in hospitals that are certified as *baby friendly*.

3.4 Prevention and management of Low Birth Weight

3.4.1 Prevalence of LBW in Vietnam

Prevalence of LBW in Vietnam is disputed, because various inconsistent figures are available. MOH states that LBW prevalence is 6% (2003), which is much lower than the average figure of 12.1% in Southeast Asian countries (34). Reasons given for the difference in figures include underestimation and unreported home deliveries.

The following table includes several estimates of malnutrition from different sources for year 2000:

Source	LBW prevalence in 1999
National Institute for Nutrition (report of 8 provinces)	13.8%
Report from Maternal and Child Health/Family Planning (MCH/FP)	12%
Health Statistics Year Book (35)	7.1%
Range	7.1% to 13.8%

Evidence that the prevalence of LBW might be underestimated includes:

- Data from the studies is more than double the data from the report in 8 provinces (see table above).
- About 71.8% of rural newborns are weighed at birth (10).
- Examination of the birth registers at some CHSs show an extraordinary number of infants registered as 2500g.
- Calculation of LBW is not clearly stated. The denominator is often total number of births that varies by sources, while the nominator is 'weighed infants under 2500g'.

Although the data varies across regions and procured using several data collection methods, it is clear that the prevalence is not as high as in other Southeast Asian countries. However, with a large population of births every year, the absolute number of LBW is significantly high. Even if we estimate the prevalence of low birth weight in Vietnam to be 8%, the total number of low birth weight newborns per year, with an average of 1.6 million births per year, would be 128,000.

Another limitation of studies on prevalence of LBW is the lack of accurate information on gestational age. Almost all studies were done retrospectively without the mother remembering exactly the gestational age of her newborn. Very few prospective studies were carried out, and even in these studies not all mothers remember exactly their newborn's gestational age. The prospective study results show that 34-45% of all LBW newborns were premature. This implies that IUGR is the leading underlying factor of LBW in Vietnam.

According to statistics from Ministry of Health, prevalence of LBW decreases year by year. However, studies in different areas show the decline is not clear in some study areas. Prevalence of LBW (report NIN 2000) varies per region being the highest in Northern Highlands, Central Highlands and Central Coast. No study to analyze factors influencing LBW in these areas are available, but it is well known that these areas are poorer in comparison to others, women have to work hard even during pregnancy, there is a lack of food, there is poor provision of antenatal care, and the prevalence of malaria is high.

3.4.2 Factors influencing LBW in Vietnam

Study results show that the factors influencing LBW in Vietnam are similar to those in other developing countries. Body mass index of mothers, good food security during pregnancy, maternal leave before delivery, antenatal care, intervals between births were all negatively associated with the occurrence of LBW (36-39). Recent national (RHD, NIN, Hanoi School of Public Health with UNICEF support) and international studies show that micronutrient deficiencies before and during pregnancy, particularly in the first trimester, play an important role in the development of LBW.

Helminth infections are very common in Vietnam and contribute to anaemia and other possible nutrient deficiencies in women of reproductive age. Diseases and symptoms during pregnancy which are closely related to LBW include toxemia, urinary and gynaecological infections, heart diseases, and anaemia. The prevalence of syphilis in Vietnam is not high; a prevalence of syphilis of 0.9% among sexual transmitted infections and a prevalence of 0.8% among pregnant women was found during a 5 province study conducted in 2003. Although syphilis screening is recommended in the NSGRH as a part of ANC, only a few health facilities have sufficient equipment and skilled staff.

Prevalence of malaria incidence has remarkably been reduced. According to the annual review meeting of malaria control programs of MOH in 2004, the prevalence of persons with positive parasite blood slide was 0.3 per 1000 inhabitants. Generally, the prevalence of malaria in the whole country has reduced by 22%, but in some areas, the prevalence has increased because of migration between Vietnam-Laos border provinces and the lack of the supervision for controlling malaria in the mountainous and island areas of Lai Chau, Ninh Thuan and Kien Giang provinces. Among interventions of the malaria control program which

target pregnant women is weekly anti-malarial intermittent presumptive treatment in pregnancy which has resulted in the very low number of 245 pregnant women suffering from malaria during pregnancy in Vietnam in 2004.

3.4.3 Care of LBW Newborns in Vietnam

During fieldtrips, it was observed that no guidelines for LBW newborns were available in provincial and district hospitals. The only specific practices or special care observed were some small newborns being nursed in incubators. In Quang Tri and Can Tho provinces, there was a lack of preventive practices to avoid hypothermia as well as poor prevention and management of hypoglycaemia and infection. In some other hospitals (Hai Duong, Quang Tri, Nghe An), LBW newborns were separated from mothers for long periods of time (24-72 hours or more) during which fluid transfusion was given instead of exclusive breastfeeding. At CHSs, no LBW newborn was observed and when care scenarios of LBW were presented, it was apparent that standard case management of LBW infants was not being practised.

The Kangaroo Mother Care method is not a common practice in Vietnam. There are two large centers which have applied Kangaroo Mother Care for LBW newborns: Uong Bi hospital in Quang Ninh province and Tu Du hospital in Ho Chi Minh City. Currently, Kangaroo Mother Care has been introduced to more than 30 provincial hospitals; some of these hospitals have successfully applied it, but few consequently use it for all LBW newborns. An evaluation of Kangaroo Mother Care implementation is planned for this year, but there is already indication that hospitals have had difficulty implementing this method because of lack of commitment by hospital management and general unawareness of its benefits. Instead, newborns are exposed to infection by sharing a cot or an incubator. In Can Tho Pediatric Hospital, there is an excellent LBW care in the neonatal unit (supported by the Swiss government through Vietnam Medical Association) which has good standards for heating, feeding, and hygiene of newborns; however, Kangaroo Mother Care is not practised.

3.5 Prevention of mother to child transmission of HIV/AIDS

3.5.1 Situation of women and newborns infected with HIV in Vietnam

By December 31, 2004, a total of 90,380 people were infected with HIV in the whole country, among them 14,428 people were diagnosed with AIDS which included 8,398 people had died from AIDS (40). It is estimated that the number of people with HIV/AIDS will be 197,500 in 2005 and will increase to 350,970 in 2010 (41).

There are indications that the number of Vietnamese women infected with HIV is increasing. At present, women with HIV account for 15% of the total number of HIV infected people in Vietnam (40). In some places like An Giang province, this proportion increases to 30-40% (42). Yearly observations from sentinel surveillance in antenatal clinics show that the rate of women infected with HIV, while still low, has increased almost 20 times, from 0.02% in 1994 to 0.35%. The provinces with the highest rates of pregnant women infected with HIV in 2004 are: Thai Nguyen, Quang Ninh, Long An (more than 1%) and An Giang (more than 2%) (42). The rate of HIV infections in commercial sex workers has also increased tenfold between 1994 and 2002 (from 0,6% in 1994 to 6% in 2002) (42). During the past few years, this rate has much higher in the Mekong Delta provinces and in the areas bordering Cambodia.

As more and more pregnant women get infected with HIV, the number of newborns with HIV transmitted from their mothers has also steadily increased. According to statistics in December 2004 from the Ministry of Health, 607 children under 5 have been infected with HIV by their mothers. It has also been estimated that 2 million women give birth in Vietnam every year; therefore, with the current rate of 0.35% of HIV infections among pregnant women, an estimate of 7000 women infected with HIV give birth each year. As indicated by various global studies, the rate of HIV transmission from mothers to children is 30-40%. If the infection rate stays steady and without effective interventions, approximately 2,800 children will be infected with HIV each year, which means an additional 14,600 children will be infected in Vietnam by late 2010.

3.5.2 Activities regarding prevention of mother to child HIV transmission in Vietnam

Prevention of HIV transmission from mothers to children is one of the most important components of the National HIV/AIDS Program. Among the goals of the program are: 100% of pregnant women diagnosed with HIV/AIDS are monitored and treated, and 100% of children with HIV/AIDS are given access to medical treatment. The following activities have been undertaken in recent years:

There are PMTCT projects funded by UNICEF and LIFEGAP in 8 districts in 5 provinces (HCMC, Quang Ninh, Hai Phong, Lang Son and An Giang). These projects are attempting to mobilize communities to increase ANC uptake of services and to promote VCT practices to identify and assist pregnant women who are HIV positive. Due to limited funding, the Ministry of Health has only managed to provide Nevirapin to maternity hospitals at central level and to some main maternal hospitals in Thanh Hoa, Hai Phong, Quang Ninh, Nam Dinh, Ho Chi Minh City and Can Tho, but this provision of medicine is not steady and cannot meet the full demands of these hospitals. In June 2005, Ho Chi Minh City began interventions to reach all case of MTCT through the whole city. Assessments of achievements are currently not available.

Training courses and workshops have been held to train obstetricians at district and province levels on prevention of HIV transmission from mothers to children. In 2002, among women counseled, tested and found positive in PMTCT centers, 44.2% of the HIV-infected pregnant women were provided with preventive treatment and this rate increased in 2003. In 2003, 247 children infected with HIV/AIDS were treated for opportunistic infections, and in the Central Children Hospital alone, 30 children of HIV were treated for opportunistic infections.

4. STRATEGIES TO IMPROVE NEONATAL SURVIVAL

In order to develop strategies to improve neonatal survival, the three service delivery modes for neonatal health interventions identified in the Lancet Neonatal Survival Series are critical and may provide a useful systematic structure: facility-based clinical care, outreach, and family-community care (see panel 1 & 2). Policy should be added to the three service delivery modes because of its importance in enhancing a conducive environment for the improvement of neonatal survival.

4.1 Policy

In order to have political commitment to ensure increased financial resources for neonatal health, there should be a focus on better integration of maternal and newborn health programs rather than the creation of new vertical newborn health programs. Success is more likely to be reached by building on current national aims and targets, strengthening the existing decentralized system, and promoting existing national plans such as safe motherhood, child health, nutrition, and immunization which overlap and complement neonatal health.

4.1.1 Policy development based on already set national aims and targets

Both the *Comprehensive Poverty Reduction and Growth Strategy* and *National Plan of Action MCH* include targets covering neonatal health such as the reduction of the infant mortality rate, perinatal mortality rate, maternal mortality rate, and low birth weight. Vietnam is also committed to the *Millennium Development Goals*. MDG targets for Vietnam related to neonatal survival are: 1) Reduce the proportion of underweight children under five from 50% to 20% by 2010 2) Reduce under five mortality rate by 2/3 by 2015 to 18 per 1000 live births and 3) Reduce MMR by three quarters by 2015 to 62 per 100,000 live births. MOH and partners should use these targets to advocate for scaling up of neonatal interventions, and the monitoring of these targets should be used to measure the impact of neonatal interventions carried out.

4.1.2 Activities within the existing decentralized health care system in Vietnam

Vietnam's health system is extensively decentralized. The Provincial Health Bureau is responsible for planning, financing, implementing, and monitoring & evaluation. To ensure inclusion of budgeted activities and monitoring & evaluation of prioritized neonatal interventions, provinces need assistance from MOH in the analysis of the neonatal situation and priority setting. A case study was undertaken in Vinh Phuc province to illustrate a provincial analysis and priority setting for neonatal interventions. (See panel 3.) In order to facilitate planning, financing, management of activities and monitoring and evaluation at provincial level, a guide with special attention to neonatal care should be developed in collaboration with overlapping programs such as safe motherhood, child health, nutrition and Expanded Program on Immunization.

4.1.3 Improvement of neonatal health components in already existing national plans

It is well known that newborns fall in the gap between maternal and child health programs. The *National Plan on Safe Motherhood and Neonatal Health* addresses the neonatal health component; however, the greatest emphasis is put on the mother and the neonatal component is limited to right after delivery. The high coverage of ANC in Vietnam should be used to improve interventions such as tetanus toxoid vaccination, breastfeeding counseling, and birth preparedness counseling. Scaling up emergency obstetric care and sick neonatal care should be combined. Postpartum care, which is currently limited to the mother, should encompass both the mother and the newborn.

Panel I: Summary of Situational Analysis

	General	Clean and Safe Delivery	Newborn Care Immediately after Birth	Breastfeeding	Prevention and Management of Low Birth Weight	Management and Prevention of Mother to Child HIV Transmission
Prevalence	NMR: 15/1000 live births Large disparities in child mortality (region, socio-economic, ethnicity)	80% of deliveries take place at health facility Major causes of neonatal mortality are sepsis and asphyxia	Major causes of neonatal mortality include hemorrhage, sepsis, and asphyxia	Initiation of BF before 1hr: 57% Exclusive BF for 6 months: 7.7%	Premature/LBW is a major cause of neonatal mortality Premature/LBW prevalence: 7.1% - 13.8% Low prevalence of syphilis	Increasing rate of HIV infected pregnant women, especially in high risk groups
Policy and Guidelines	Decree on neonatal health Several policies and plans exist in overlapping areas such as safe motherhood, child health, and nutrition NSGRH exist and includes neonatal sections	Standards of clean delivery kits included in the "National list of medical equipment" for CHC	Vitamin K1 in NRHG No overall consensus on cord care Lack of good basic resuscitation guidelines WHO practical guide for kangaroo mother care translated into Vietnamese	Decree on marketing and use of breast milk substitutes National steering committee for breastfeeding	No specific guidelines on management of LBW Screening syphilis included in ANC in health facility where supplies and equipment is available IPT for pregnant women included in NSGRH	General guidelines on treatment to prevent HIV transmission from mother to child
Service Delivery						
Clinical	86% of women living <5 kms of MCH service High healthcare seeking behavior (70-80%) at health facility	Weak infection control: lack of supplies & equipment and knowledge of HWs Weak partograph usage: non-standardized system & lack of HW knowledge Low coverage of basic and comprehensive obstetric care	Weak practice of Vitamin K prophylaxis Weak management of asphyxia: lack of supplies and equipment resuscitation and knowledge and skills Bad practices regarding hypothermia	HWs lack adequate knowledge on exclusive BF and skills on counseling and communication	87% of women seek ANC but quality is not up to standards High coverage IPT No standard case management of LBW newborns at hospitals & CHS Low implementation of Kangaroo Mother Care	PMTCT project in 8/631 districts Limited availability of nevirapine in health facilities
Outreach	Mobile teams covering family planning, health education, nutrition, and immunization		Post-natal visits exist only in certain areas and mostly focus on the mother	Nutrition collaborators provide education on BF	Nutrition educators give nutrition advice to pregnant women	
Community	Village Health Workers exist Strong presence of women's groups	Certain harmful traditional practices still exist around delivery and are practiced in areas where large number of home deliveries still take place	Lack of awareness among community on keeping newborn warm	Common beliefs: (BF is no good for the newborn, mothers do not have sufficient milk) Mothers go back to work soon after delivery		

The Integrated Management of Childhood Illness (IMCI) in Vietnam mostly focuses on the sick child (1 week – 5 years). After validation of the newly developed neonatal part of IMCI (0-2 months of age), Vietnam should consider expanding the present IMCI algorithm to include a neonatal component. The community component can be strengthened with further development of key family and community messages in which newborn care practices should be also included.

Expanded Program on Immunization (EPI) has set EPI days on which children and pregnant women are vaccinated. Furthermore, outreach visits are carried out by CHWs to mothers who gave birth by home delivery. Both these interventions are good opportunities to disseminate additional information regarding antenatal and postnatal care.

The National Plan on Nutrition's component on breastfeeding and complementary feeding is weak. Development of a plan focused on Infant and Young Child Feeding is ongoing in which much more emphasis is put on the breastfeeding initiation and exclusive breastfeeding, which are interventions that need to be strengthened.

Panel 2: Strategies to improve neonatal survival

Strategies to improve neonatal survival	
Policy	Ensure a policy environment, which is conducive to neonatal health <ul style="list-style-type: none"> - Build on already set national aims and targets - Work within the existing decentralized health care system - Improve neonatal health component in already existing national plans
Service delivery	
Clinical	<ul style="list-style-type: none"> - Improve skilled attendance - Ensure basic and comprehensive obstetric and neonatal care at appropriate levels of care - Target un-reached populations
Outreach	<ul style="list-style-type: none"> - Post-partum home visits check-ups
Community	<ul style="list-style-type: none"> - Improve family and community practices especially targeting unreached populations such as ethnic minorities and the poor

4.2 Service delivery: facility-based clinical care

As stated in the situational analysis, factors determining access and utilization of care include: 1) distance and time to health services 2) ability to pay 3) education 4) culture, and 5) quality of care. In order to improve access and utilization of clinical service delivery, a particular focus will be to improve these factors by improving skilled attendance, to ensure basic and comprehensive obstetric care at appropriate levels of care, and to target unreached and vulnerable populations (living in remote areas, poor, less educated, and ethnic minorities).

4.2.1 Improvement of skilled attendance

Skilled attendance is a fundamental part of quality of care at health services. Figures show that while skilled attendance is quite reasonably high in MCH (figure 9 and 10), certain aspects indicated in the situational analysis (especially at lower levels and in the area of counseling and emergency care) need to be improved. While a national competency-based training is developed for maternal and neonatal health under the Safe Motherhood Initiative, this in-service training needs to be updated and improved, especially since the neonatal part is lacking certain important aspects such as neonatal resuscitation, special care for low birth weight newborns, and counseling on breastfeeding. Furthermore, neonatal skills in newly educated physicians, midwives, nurses, and other health workers are not adequate. Strengthening the neonatal care component in pre-service education covering secondary medical schools and medical schools is therefore of paramount importance and also because pre-service education is more cost-effective and sustainable than in-service training.

In order to sustain skilled attendance after pre-service and in-service training, supportive supervision is key. Supervision is supposed to be carried out regularly by provincial and district supervision teams. These teams should however be trained on improved in-service neonatal care training, and more neonatal indicators on skills and health system issues should be included in the supervision list.

Quality assurance is implemented through yearly cross-checking of health facilities. Checklists used for these cross-checks need to be updated to include necessary neonatal indicators.

Update of neonatal guidelines within the existing NSGRH is required. In addition, referral care guidelines for newborns need to be added. In the latter, it should be specified when and at which level neonates should be referred to a higher level and how to conduct “back referrals” (check-ups at lower level are carried out after discharge at higher level).

4.2.2 Basic and comprehensive obstetric and neonatal care at appropriate levels of care

Sick newborns require separate areas for care, as they are very prone to infections and have different requirements than older children and adults. Currently, neonatal departments exist in only a few provincial hospitals. At district and commune levels, neonatal areas are mostly lacking, and neonatal intensive care is very weak. At provincial and district level where comprehensive obstetric and newborn care is supposed to be given, newborns need to be cared for in neonatal departments equipped with a neonatal intensive care. At commune level, there needs to be a separate area which provides care for newborns before referral.

In these neonatal departments, an optimal environment and neonatal clinical care for sick newborns needs to be ensured. Additionally, there should be special care for low birth weight newborns, such as the implementation of Kangaroo Mother Care. Neonatal departments can only function if they have sufficient supplies and equipment for resuscitation, provide clinical care for sick newborns, and have capabilities to perform special care for low birth weight newborns. The NSGRH needs to include a list of basic and comprehensive supplies and equipment required for newborns.

4.2.3 Focus on unreached and vulnerable populations

In order to lessen the existing disparities, a priority should be given to unreached and vulnerable populations due to factors such as geography, poverty, level of education, and cultural beliefs. This requires raising awareness of MOH and partners on the fact that maternal, neonatal, and child health is especially worse in areas such as the Northwest Mountains and the Central Highlands. Guidance should be given to MOH and partners in selecting areas of focus for the various related vertical programs. Regarding Prevention of Mother to Child Transmission of HIV/AIDS, high prevalence areas such as Ho Chi Minh City, Ha Noi, Hai Phong and Quang Ninh need to be targeted.

4.3 Service delivery: outreach

CHWs are part of mobile teams, and VHWS are responsible for outreach service. Particularly in remote and mountainous areas, VHWS are of major importance. In order to sustain the village health workers network in these areas, the central government pays them a fee of 40,000 VND per month. CHW mobile teams are steered by vertical programs such as EPI, VCPFC/FP, and nutrition. Knowledge of these mobile teams and of the work of VHW in MCH needs to be strengthened, and post-partum home visits focusing on mothers and newborns should be included in their duties, especially in remote and mountainous areas.

4.3.1 Post-partum home visits for check-up

Two peaks in neonatal mortality exist: <24 hrs after delivery and 3-6 days after delivery. Neonates dying from infectious diseases such as pneumonia, a major cause of mortality among newborns, most likely make up the latter peak. In order to reach these newborns, a community component for routine care of newborns should be added to the already existing postnatal check-ups for the mother. Outreach health workers should visit mothers and newborns to provide home-based neonatal care and health promotion as well as to detect sick newborns who need referral. Extra contacts should be proposed for low birth weight newborns.

4.4 Service delivery: family-community care

Family-oriented and community-oriented services promote healthy home behavior and appropriate care seeking. Family and community involvement is key to improving the health of newborns. In remote and mountainous areas, community mobilization and individual empowerment is necessary to improve quality of health care and to increase engagement of communities in antenatal, intra partum and postpartum practices.

4.4.1 Improvement of family and community practices, especially targeting unreached populations such as ethnic minorities and the poor

The situational analysis shows that various healthy home behaviors regarding newborns such as early initiation of breastfeeding and exclusive breastfeeding, health seeking preventative care behavior (ANC and immunization), and health seeking curative care behavior (sick newborns) still needs to be improved. Existing messages on maternal and neonatal care developed by UNICEF, WHO and Centre for Health Education need to be more clear and consistent when disseminated by CHWs and VHWs. Furthermore, community mobilization should be carried out by establishing partnerships with community-based organizations such as the Women's Union and the Youth Union. These are strong community-based organizations, which can offer various activities for their members and for the community. Mass media entertainment education is another method to raise awareness and to motivate behavior change. In Vietnam, all television, radio, and print media belongs to and functions under government's control. Because neonatal health is a priority of the government, the use of mass media is facilitated.

4.5 Monitoring and evaluation of progress

In order to measure progress towards the improvement of neonatal health, neonatal indicators need to be included in all major surveys (such as Multiple Indicator Cluster Survey and Demographic Health Survey) and in routine health system data (Health Information System). Neonatal indicators recommended by the Lancet series are shown in table 3.

Table 3: Indicators measuring progress towards improvement neonatal health, Lancet series

- | |
|---|
| <ul style="list-style-type: none">- Coverage ANC & TT vaccination- Skilled care at birth- Exclusive breastfeeding: proportion of newborns breastfed within 1 hour of delivery, proportion of infants exclusively breastfed at 1 month and at 6 months of age- Postnatal care visits within 3 days of birth- Proportion of births registered |
|---|

Indicators regarding coverage of antenatal care and tetanus toxoid vaccination are already included in HIS. Proportion of deliveries carried out by skilled birth attendants and proportion of registered births are measured by VDHS. Annually, the national nutrition survey measures exclusive breastfeeding rates. Postnatal care visits within 3 days of birth is not included in any major survey or routine monitoring system.

Collection of reliable information is important for stakeholders to plan and to mobilize resources and for implementers to act accordingly. Too often, indicators collected are recorded and disseminated to a higher level without a critical review of the outcomes, without discussions on how to improve the situation, and without a process to enhance a change. If the latter is lacking, training should be given in monthly meetings.

CASE STUDY

Neonatal Care in Vinh Phuc Province

I. Introduction

Vinh Phuc is a lowland province situated in the northern part of Vietnam bordering Hanoi and the provinces of Bac Ninh, Thai Nguyen, Tuyen Quang, Phu Tho, and Ha Tay. In 1997, Vinh Phuc was separated from Vinh Phu province and now covers an area of 1,372 km² with a population of 1,141,666 inhabitants living in 2 towns (Vinh Yen and Phuc Yen), 7 districts (Vinh Tuong, Yen Lac, Tam Duong, Tam Dao, Binh Xuyen, Me Linh, and Lap Thach), and 150 communes.

At provincial level, there exists a Department of Provincial Preventive Medicine and 2 hospitals, the General Provincial Hospital in Vinh Yen town (with 97 doctors, 206 nurses and 400 beds) and Me Linh Regional Hospital. In each district, there is a district health center consisting of a district hospital and a district unit of preventive medicine. Commune health centers are also available in all communes.

Neonatal care in Vinh Phuc province is an example of how interventions in newborn health are prioritized based on a situational analysis. The reasons why Vinh Phuc was chosen include: (1) its location as the gateway to all provinces in northwest Vietnam, (2) its good leadership in the health care arena, (3) the high commitment of its administrative leaders and health authority in implementing newborn health.

During this case study, a fieldtrip was carried out in the General Provincial Hospital in Vinh Yen town, two district hospitals (Vinh Tuong in a low land area and Lap Thach in a mountainous area), and 2 commune health centers (Thuong Trung commune in Vinh Tuong district and Tien Lu commune in Lap Thach district). This fieldtrip included 1) meetings with provincial and district leaders to discuss newborn health and 2) visits to 1 provincial hospital, 2 district hospitals, and 2 community health stations by 3 teams, each consisting of 1 national level and 1 local level resource person. During the field visits, a total of approximately 25 staff were interviewed using a questionnaire (see annex 3), and observations were carried out focusing on care during and after delivery, breastfeeding practices, and management and organization of newborn care. Additionally, all statistics regarding newborn health at these facilities were collected. It is acknowledged that this survey covers only a limited number of health facilities and health staff. Also, using observation as one of the study methodologies could have caused a bias due to changes in general practice.

II. Current Situation in Neonatal Care in Vinh Phuc Province

Neonatal morbidity and mortality

According to data from the Department of Maternal and Child Health – Family Planning, neonatal mortality in Vinh Phuc province was 10.2, 11.0, and 9.7 per 1,000 living newborns during the period 2002-2004 respectively. It should be noted, however, that these figures are derived from health facility reports and may be lower than the actual figures. Early neonatal deaths (those of newborns < 7 days old) account for 59% of all neonatal deaths, and late neonatal deaths (newborns between 7-28 days old) account for the remaining 41% of the deaths. Additionally, 14% of perinatal mortality were stillbirths. The main causes of neonatal deaths were pneumonia (74%), congenital malformation (9%), intra-cranial hemorrhage (3%), and other pathologies (14%). At least 45% of these deaths are related to prematurity/LBW. Two deaths were due to umbilical tetanus.

In 2003, the total number of births in the whole district was 16,974. At the provincial hospital, 4,057 births took place in 2004, of which 321 newborns were treated for respiratory infection, premature/low birth weight, jaundice, asphyxia, skin and umbilical infections. The inpatient fatality rate was $8/321 = 2.5\%$ which is far lower than other provinces (5). One reason may be the increased rate of referral from provincial hospitals, district hospitals, and community health stations to higher level healthcare services such as National Hospital of Pediatrics (NHP) in Hanoi. The data from NHP show that Vinh Phuc province ranks second in neonatal referrals by province.

Organization, Human Resources, and Equipment

Almost all births (98.9%) take place at health facilities. The 1.1% of births at home mostly took place among Sandiu ethnic minority women and were all assisted by trained health staff. Vinh Phuc and Me Linh Provincial Hospitals as well as La Thach District Hospital have pediatric departments and are authorized to carry out caesarean sections (CS) (which account for 35% of all deliveries). However, even though pediatric departments exist, all very sick/low birth weight newborns are either treated in the intensive care unit by omnipractitioner intensivists alongside other patients or referred to NHP in Hanoi.

From interviews and systematic observations, it becomes clear that newborn care in Vinh Phuc province is not optimal. The main reason is the absence of an appropriate newborn health system, the lack of equipment as well as limited knowledge on newborn care. Additionally, there are no newborn care units at pediatric and obstetric departments of the provincial hospital. In the pediatric department, there are no doctors or nurses who are appropriately trained in newborn

care. Among those who provide care to newborns, there is only 1 doctor and 2 nurses in the pediatric department and some midwives, of which only one was trained on newborn care for 3 months. According to key health informants, coordination between pediatricians and obstetricians in caring for very sick/low birth weight newborns is absent.

At district level, a pediatric department does not exist. Newborn patients are cared for in a mixed “pediatrics, infectious disease, and emergency department” or are referred early to higher levels. Some health workers have been trained in elementary courses organized by the safe motherhood program, which includes some limited components of newborn care.

At the community health station, midwives or pediatric/obstetric auxiliary doctors provide care for newborns and have the responsibility for carrying out one to two home visits during the first week of the postnatal period. However, their main task only focuses on the mothers’ health and the umbilical cord status of the newborn.

Documents and Guidelines on Newborn Care

In Vinh Phuc province, there are no documents, guidelines or protocols on newborn care in the obstetric department of the General Provincial Hospital in Vinh Yen town. In the pediatric department, a rudimentary guideline on newborn intensive care and resuscitation has been developed; however, it has never been used because very sick newborns are treated in the intensive care unit. At lower levels (district hospitals and community health centers), no guidelines on newborn care are available.

Neonatal Care Interventions

Clean and Safe Birth

Observations during the field visits show that antenatal care in Vinh Phuc province is appropriately implemented and sustained. The average number of antenatal visits for each expectant mother is 3. Reports from all communities and provincial MCH-FP centers show that more than 90% of mothers receive two doses of tetanus vaccination during pregnancy. Medical records covering the last 3 months at all facilities visited show that a partograph was used in approximately 50% of births at different levels of the health system. However, in several health settings, including the obstetric department of the provincial hospital, a partograph is not used because it is not standardized and entails filling in complicated forms from different health programs. Observations during deliveries show that all health workers wear sterile gloves, use sterile instruments, and keep mothers clean during birth. In case of delivery at home, health workers are always present and attend the birth with a clean delivery package. However, as already stated 2

neonatal deaths were caused by umbilical tetanus, which needs further investigation.

Postnatal care

During our observation of deliveries at the provincial hospital, midwives followed standard procedures such as drying newborns, putting newborns on mother’s abdomen (skin to skin contact), cutting umbilical cord, applying antiseptic eye drops, weighing and measuring the newborn, and dressing the newborns after general examination. Mothers are encouraged to breastfeed their newborns as soon as possible in the first hour after birth. All newborns are vaccinated against viral hepatitis B (first shot) after birth, but they do not receive BCG and vitamin K1. BCG immunization is done through the expanded program of immunization (EPI) in community health centers every month on a fixed day. Since 2003, MOH has recommended vitamin K1 for prevention against intra-cranial hemorrhage; however, due to lack of awareness among health workers, it is not appropriately carried out. Health workers only use vitamin K3 5mg in case of asphyxia or premature/LBW, as indicated in textbooks.

At district hospitals and community health centers, the procedures are similar as to those at provincial hospitals except that skin-to-skin contact is practiced in only a few cases and eye drops are not given systematically. Also, vaccination against hepatitis B is carried out only at provincial hospitals and 4 district hospitals, but not systematically at all levels by EPI, as recommended by MOH.

The mean time in which mothers and newborns stay at provincial and district hospitals after birth are about 1 to 2 days and at community health center is 1 day. For newborns delivered by caesarian section, the amount of days spent in the hospital depends on the health status of mothers and newborns, but it is approximately 1 week.

Hypothermia Prevention

During fieldwork at the provincial hospital, observations of postnatal care reveal that health workers take good care of newborns to prevent hypothermia. They immediately dry the newborn, lay the newborn on the mother’s abdomen, dress the newborn, and keep it with its mother. However, according to the results of our rapid appraisal, kangaroo mother care has not yet been introduced at all levels of healthcare, even for premature/LBW newborns.

At the provincial hospital, the delivery room is maintained at the correct temperature, but the newborn room of the pediatric department contains only a small radiator and is too cold. In district hospitals, there is no equipment to warm the postnatal care room, and even in the delivery room, the radiator is not powerful enough.

Prevention and Management of Asphyxia and Newborn Resuscitation

All high-risk pregnancies in the community were always timely referred to the 2 provincial hospitals or to the district hospital in Lap Thach.

Health statistics at the provincial hospital showed that 2.5% of newborns needed intensive care and/or resuscitation. However, pediatricians or intensivists in the delivery room were absent in all cases. Midwives or obstetricians start resuscitating newborns suffering from asphyxia by aspirating mucus from the respiratory tract and by stimulating the newborn by hitting at the heel or tapping the buttock. If these procedures fail to work, artificial ventilation by mask and Ambu bag or by mouth-to-mouth is carried out. An intensivist is called for further resuscitation, intubations, and ventilation by mask and Ambu bag. In general, this is carried out before urgent referral to central level facilities.

There is currently no newborn intensive care unit in the pediatric department of the provincial hospital. When there is an emergency involving a newborn, there exists some rudimentary instruments such as an electric aspirator, oxygen sources, mask and ambu bag (which is not available in newborn size). Doctors and nurses in the pediatric department are not trained in dealing with newborn emergencies, intensive care or resuscitation. In fact, all newborns that need intensive care are always transferred to the mixed intensive care unit at the hospital.

In Lap Thach District Hospital where caesarian section is authorized, the obstetrician is responsible for newborn resuscitation. The newborn care room is neither warm nor clean enough. Equipment for tracheal intubations is lacking. During the visit, no newborn resuscitation was observed, but when asked to describe the steps for newborn resuscitation, the correct answers were given.

At the community level, newborn resuscitation has never taken place. Every community health station keeps some masks and ambu bags, but the size is always too large for use on newborns. No oxygen supply exists at any commune health station.

Breastfeeding

During the interview, all health workers are aware of the usefulness of initiating breastfeeding in the first hour after birth. However, no study has ever assessed breastfeeding practices in Vinh Phuc province. During the fieldtrip, we had no chance to observe breastfeeding practices for newborns at different health levels.

It was observed that communication activities on breastfeeding were implemented and sustained at all levels of healthcare in the province. The provincial hospital has been certified as a "baby-friendly hospital" for several years. However,

formula feeding was sometimes given to young mothers who felt that they lacked breast milk.

Prevention and Care of Low Birth Weight

According to statistics from the Vinh Phuc Health Authority, the total LBW rate is very low (3.4%). While good ANC exists and the province enjoys better socio-economic conditions in comparison to other provinces, it is certain that this LBW rate is underestimated. Moreover, the same statistics show that causes of nearly half of newborn mortality are somehow closely associated with prematurity/LBW (2). More investigation is therefore needed to assess the exact rate as well as to analyze causes and consequences of prematurity/LBW in Vinh Phuc province. At the provincial hospital, prematurity/LBW rate is reported twice (8.7%) as high as the total rate and the rate in the community, which is similar to figures derived from other provincial hospitals (4,6,7).

A great majority of premature/LBW newborns are transferred to central hospitals, which is possible due to short distances, smooth roadways and available means of transportation. When admitted at the provincial hospital, premature/LBW newborns are cared for in the intensive care unit which treats patients of all ages and with varying health needs, thereby increasing exposure of LBW newborns to infections. No official guidelines currently exist for newborn care. Even for premature/LBW newborns, kangaroo care has not been introduced. District hospital and commune health station do not provide care for Premature/LWB newborns.

Referral Care

A great number of sick and premature/LBW newborns are referred to central hospitals (especially the NPH), either directly from home, via commune health stations or district hospitals or after initial care in one of the two provincial hospitals. 69% of those admitted and cared for in the intensive care unit after caesarian section are then referred to the National Pediatric Hospital or National Obstetrics and Gynecology Hospital in Hanoi.

12% of sick newborns are referred from the pediatric department of the provincial hospital to the national hospitals due to premature/LBW, jaundice, respiratory distress, intra-cranial hemorrhage or congenital malformation. In general, all prematures/LBW newborns in need for health care are referred to national hospitals.

Referrals from provincial hospitals are properly carried out. Pre-referral treatment is conducted; an ambulance with nursing personnel is equipped with warm packages, oxygen bags, ambu bags and masks. Unfortunately the ambu bags and masks are available but not in newborn size, and the equipment is not monitored during transport.

Newborns from district hospitals are also referred to higher levels (provincial hospitals or more frequently to national hospitals) by ambulance. However, the ambulance lacks correct equipment to keep the baby warm as well as pre-referral drugs to prevent hypoglycemia. A considerable number of newborns are referred to central hospitals directly from the community, thereby bypassing other health centers or hospitals. Most often, the family transports the sick or premature newborn by motorcycle without any intervention to prevent hypothermia and hypoglycemia. This can lead to an often repeated scenario of a very sick newborn arriving at the health facility in severe condition due to extreme respiratory distress or severe hypothermia or asphyxia caused by wrapping using impermeable tissue or nylon.

A telephone communication referral system is not in place at the commune level.

Prevention of Transmission of HIV/AIDS from Mother to Child

To date, no reported cases of HIV/AIDS have ever been detected in children from Vinh Phuc province. According to statistics from the provincial health authority, all pregnant women admitted to the obstetric department of the provincial hospital are screened for HIV infection. At district level, education and communication on HIV/AIDS are given; however, screening tests are performed upon requested but are not systematically carried out.

In 2004, there was one reported case of a HIV in a pregnant woman admitted to the obstetric department of the provincial hospital. Unfortunately no follow-up on the newborn was done and no counseling was given on how to care for the newborn.

III. Interventions Needed to Improve the Current Situation

Based on the situation described above regarding neonatal care in Vinh Phuc province, implementation of activities at all levels (MCH/FP center, provincial/district/commune service delivery, outreach and community) is needed. For a thorough list of activities, see table I.

IV. Monitoring and Evaluation

Monitoring and evaluation should be carried out using existing systems such as HMIS, health facility reports, and household surveys.

List of indicators:

<p>HMIS:</p> <ul style="list-style-type: none"> - Proportion of skilled attendance at birth - Average antenatal care visits and coverage of antenatal care - Coverage of 2 doses of TT
--

<p>Health Facility Reports:</p> <ul style="list-style-type: none"> - Number of post-natal care visit for mothers & newborn - Number of post-natal care visits within 3 days of delivery - Proportion of births weighed - Proportion of newborns who need resuscitation - Proportion of newborns who need to be referred <p>Surveys:</p> <ul style="list-style-type: none"> - Prevalence of LBW - Neonatal mortality rate - Neonatal mortality as proportion of IMR and U5MR - Proportion of newborn breastfed within 1 hour after delivery - Proportion of newborns breastfed exclusively for 6 months
--

Table 4: Newborn Care Activities at different levels of Health Services

MCH/FP Center	<p>Coordinate of vertical programs</p> <ul style="list-style-type: none"> - Nutrition: counsel on nutrition during pregnancy; supply folic acid, Fe tablets, and Vitamin A; propose survey LBW - EPI: improve TT (propose survey TT), BCG, and HBV - RBM: provide anti-malarial to mothers in endemic areas - BF: propose survey BF - IMCI: guide health staff to provide care for infants up to 2 months of age - Safe Motherhood: counsel on BF and neonatal care during ANC; give BCG & Hep B immediately after delivery, including neonatal care into postnatal visits
Provincial Service Delivery	<p>Improve skilled attendance</p> <ul style="list-style-type: none"> - Develop guidelines on newborn care including LBW and resuscitation - Train and supervise pediatricians and midwives in newborn care including resuscitation, parthograph use, Vit K1, LBW (KMC) <p>Ensure appropriate basic and comprehensive care</p> <ul style="list-style-type: none"> - Establish newborn care units - Improve coordination between obstetricians and pediatricians - Improve supplies and equipment especially regarding resuscitation - Set up referral level criteria - Establish telephone communications network
District Service Delivery	<p>Improve skilled attendance</p> <ul style="list-style-type: none"> - Train and supervise pediatricians and midwives in newborn care including resuscitation, parthograph use, Vit K1, eye drops, LBW (KMC) <p>Ensure appropriate basic and comprehensive care</p> <ul style="list-style-type: none"> - Establish pediatric departments - Set up referral level criteria - Establish telephone communications network
Commune Service Delivery	<p>Improve skilled attendance</p> <ul style="list-style-type: none"> - Training and supervision of pediatricians and midwives in newborn care including resuscitation, parthograph use, Vit K1, eye drops, LBW (KMC) <p>Ensure appropriate basic and comprehensive care</p> <ul style="list-style-type: none"> - Set up referral level criteria - Establish telephone communications network
Outreach	<ul style="list-style-type: none"> - Improve postnatal care visits: include more neonatal care in already existing visits
Community	<ul style="list-style-type: none"> - Counsel mothers to recognize danger signs - Encourage mothers to accompany their newborns during referral

ANNEXES

Annex I: Child Health Legislation

Policies

Law of Protection, Care, and Education of Children (1991, updated in 2005)

Focus on protection of children's health; free primary health care for children under 6; support for handicapped children for rehabilitation and integration into society

Strategy for People's Health Care and Protection (2001-2010)

Focus on access to PHC; access and utilization of good quality service, IMCI strategy is stated in here. This is the primary policy document for health sector development in Vietnam.

Strategies

National Populations Strategy (2001-2010)

Focus on needs for family planning and improving quality of services for sustainable reduction of fertility rate, rapid fall of voluntary abortions, improvements in quality of care services for mothers and women as well as controlling STDs and HIV/AIDS

National strategy on Reproductive Health (2001-2010)

Focus on improvements in Reproductive Health Care

National Nutrition Strategy (2001-2010)

Focus on improvements in nutritional status for primarily children and mothers

Decrees

Decree no. 74 on Marketing and Use of Breast Milk Substitutes to Protect and Promote Breastfeeding (2000)

Guidelines on marketing and use of breast milk substitutes to improve child health and to support the comprehensive development of children

Decree 1452 QD-BYT (issued on 8 May, 2000)

Guidelines on treatment to prevent HIV transmission from mothers to children (preventive treatment before and during births, the techniques of delivery, post-delivery treatment to mothers and newborns, ending of pregnancies). These guidelines are being improved and adjusted to catch up with the developments of HIV/AIDS.

Circulars

Circular Letter on Guidance on Breastfeeding (1999)

Guidance for the implementation of the above decree on trading in and use of breast milk substitutes to protect and to promote breastfeeding

Joint Circular No. 4 (2001)

Guidance on the implementation of decree no. 74

Regulations

Functions, Tasks, and Organizational Mechanisms of MCH-FP at Provincial and District Levels (1999)

Standards on functions, tasks, and organizational mechanisms of MCH-FP at provincial and district levels

Decisions

Decision of Minister of Health on Establishment of IMCI Steering Committee (1999)

To give overall assistance of IMCI activities

Decision on Guidelines for Diagnosis and Management of Obstetric Complications (2000)

To improve quality of care by disseminating standards

Decision No. 23: National Plan of Action on the Committee for Child Health Care and Protection of Vietnam (2001)

Expansion of health services for children regarding quality and quantity (with a focus on lower levels). Giving loans without interest to improve child health, focus on the poor, production of drugs by local drug companies, involvement of private health sectors, increase of budget for PHC and preventive

activities, supply of vaccines and micronutrients, and improve collaboration of all programs in child health.

Decision No. 385 on Promulgating Regulation of Technical Responsibilities in Reproductive Healthcare within Facilities (2001)

Describes responsibilities at district and commune levels in reproductive health care

Decision No. 1978 on Promulgation of IMCI Training Materials (2001)

MOH agrees to use IMCI training materials for pre- and in-service teaching

Decision No.370 on Issuance of the National Health Benchmarks at Commune Level (2001-2010)

Provides criteria and norms for health stations and communes, wards and towns (Benchmarks range from: households knowledge, school consultations, knowledge and skills of health professionals, child health care, women receiving professional birth attendance, women delivering at health facilities, equipment and supplies, medicine kit for VHWs, personnel structure, essential drugs)

Decision no. 1028 on 10 Appropriate Advice on Nutrition (2002)

Breastfeed newborns immediately after delivery, breast feed infants exclusive for 6 months then feed children complementary foods while continuing to breast feed up to 18-24 months

Directives

Directive of Minister of Health on Enhancement of IMCI Implementation in Vietnam (1999)

To improve health workers skills to manage childhood illnesses

Directive of the Executive Board of Party on Consolidation and Completion at District and Commune Health Facilities (2002)

Training of first level health staff in PHC to strengthen the capacity and quality of care at first level health facilities in order to improve the health status of adults and children in particular

MOH Directive on Newborn Health (2003)

Guidance of provincial level on how to improve newborn care and designate hospitals to lead implementation of newborn care at lower levels

Approvals/Letters

Approval of VHW Training Manual for Support for Disadvantaged Areas (SDA): 3 Modules: 'Hygiene and Sanitation', 'Mother and Child Health Care' and 'First Aid and Prevention in Common Diseases and Accidents' (September 2002)

Letter No. 1671: from Minister of Health to the Chairman Provincial/City Peoples' Committee (2002)

The Minister of Health encourages chairpersons of provinces to guide and delegate agencies to cooperate in the implementation of Hep B vaccine nationwide from 2002 to 2006. Implementation of 3 doses of Hep B vaccine will be carried out in 61 provinces in 2002 in which 23 provinces will implement 100% and 38 provinces will implement 50% of children under 1. From 2003, 100% of children under 1 nationwide will be immunized.

Plans

5 Year Social and Economic Development Plan (2006-2010, *under development*)

Concretizes objectives set in sector strategies, CPRGS, Vietnam Millennium Development Goals and Vietnam's international commitments

5 Year Health Plan (2006-2010, *under development*)

Concretizes objectives set in Sector Strategies and Health Investment Plan
Improvement of health in general.

Safe Motherhood Master Plan (2003-2010)

To improve maternal and newborn care in delivery and increase the quality of essential obstetric care (development guidelines, training, improvement family and community practices)

Master Plan for Nutrition (2001-2010)

To improve the nutrition status in quality, quantity and safety for Vietnamese people, in particular mothers and children, and to reduce diseases related to nutrition (training, IEC, research, safe food at home, prevention PEM, Vitamin A supplementation 6-24 months and mother after delivery, deficiencies of: anemia, iodine and chronic diseases related to nutrition, integration into other programs, M&E, supervision)

Plan of Action for Infant and Young Child Feeding (2005-2010, *under development*)

To ameliorate infant feeding quality & strengthen nutrition status, growth & decrease mortality in Vietnamese children by 2010

National Plan for Neonatal Health (2005-2010, *under development*)

Prevention and management of asphyxia, infections, hypothermia, MTCT, LBW. BF and safe and clean delivery

Annex 2: Guidelines for Collecting Data of Maternal and Newborn Healthcare in Vinh Phuc Province

I. Organization of neonatal care in provincial level

Describe through observation the organization of neonatal care in:

- Pediatric Department
- Obstetric Department
- Separate Neonatal Care Unit

2. Data available in hospitals, MCH-FP centers, and provincial health offices:

- Number of births in 2004
- Average number of ANC
- Average number of TT
- Home delivery
- Number of live birth
- Number of still birth
- Number of LBW
- Number of newborns who need resuscitation at birth (if no data, estimate the rate)
- Number (rate) of difficult deliveries
- Number (rate) of CS
- Number of deaths within 1 week after delivery
- Number of deaths within 1 month after delivery
- Number of maternal deaths

I. Provincial hospital

Staff:

	Obstetric Dept.	Pediatric Dept.
<ul style="list-style-type: none"> - Number of doctors - Number of obstetricians - Number of pediatricians - Number of neonatologists - Number of midwives - Number of nurses - Does the hospital receive students for practice? 		

Normal delivery:

Who is responsible for normal delivery?

Interview and observe 3-5 staff who are responsible for normal delivery:

Do you use photograph for all deliveries?

Tell me the steps of newborn care at delivery (observation if have delivery)

Tick the options when answer is received:

- Drying of the newborn
- Put newborn on mother's abdomen, skin to skin contact
- Clamp and cut the cord
- Put warm hat and clothes on newborn
- Breastfeeding
- General examination
- Eye care
- Cord care
- Others

Other practices at delivery:

How long does the newborn stay at the hospital after delivery?

Does the newborn stay with mother after delivery?

For how long is the newborn breastfed?

Do mothers apply KMC?

Are any health education materials available?

- Breastfeeding
- Antenatal
- Others

Neonatal resuscitation:

Who is responsible for neonatal resuscitation?

Where does the resuscitation take place?

Is the area for resuscitation warm enough?

Interview and observe 3-5 staff that is responsible for neonatal resuscitation and tick the options below when answers are received:

What are the steps in neonatal resuscitation?

- Keep newborn warm
- Clear airway
- Simulation
- Suction
- Bagging and mask
- Mouth to mouth resuscitation
- Intubations
- Heart compression
- Medicines
- Other practices:

List of equipment for resuscitation:

	Equipment	Tick if available
1	Clean water	
2	Soap	
3	Tissues	
4	Towel, how often for cleaning towel	
5	Warming device	
6	Functioning suction machine	
7	Type of suction: electronic/ manual	
8	Oxygen supply	
9	Oxygen catheter	
10	Mask, bag with neonatal size (observation and check if functioning)	
11	Equipment for intubation	

Immunization:

	% of newborns receiving immunization	Service provision	Responsible provider
BCG			
Hep B			
Vit K1			

Guidelines:

	Guidelines	Tick if available
1	Newborn resuscitation	
2	Care of newborn after resuscitation	
3	Oxygen therapy	
4	Using antibiotics	
5	Monitoring of patients	
6	Feeding	
7	Prevention of hypothermia	
8	Guidelines for KMC	

Training:

	Training	No. of staff trained
1	Basic neonatal care	
2	Neonatal resuscitation	
3	Breastfeeding	
4	Other topics:	

Referral care

Is hospital able to refer patients?

Was staff trained in referral according to the standards?

During referral, was there prevention of hypothermia?

During referral, was there prevention of hypoglycemia?

What kind of transportation is usually used?

Ambulance Motorbike Car others:

During referral:

- Does the mother accompany the newborn?
- Does health staff accompany?
- Is there equipment for emergency care?
- Is pre-referral treatment given?

Group discussion

Is late referral a problem?

If yes, why and where?

What is the most common cause for late referral?

What are the recommendations to improve referral care?

II. Commune health station

What was the number of births during last year?

Who is responsible for delivery?

Describe the steps of delivery.

Do staff go to the household for postnatal care?

If yes, how many times in 1 month after delivery?

What do postnatal care visits include?

During home delivery does mother use clean birth kit?

Is health staff trained in neonatal resuscitation?

Describe the subsequent steps of resuscitation:

All provincial hospitals, district hospitals, and commune health stations

Comments regarding neonatal care situation in the province:

- Positive comments
- Problems that need to be improved
- Recommendations for improving neonatal care
- Training
- Guidelines
- Equipment
- Staff
- Others

REFERENCES

1. Lawn J, Cousens S, Bhutta Z, Darmstadt G, Martines J, Paul V. "Why are 4 Million Newborn Babies Dying Each Year?" *Lancet* 2004; 364: 399-401.
2. The World Health Report 2005. "Make Every Mother and Child Count." World Health Organization.
3. Bhutta Z, Darmstadt GL and Hasan B. "Community-Based Interventions for Improving Perinatal and Neonatal Outcomes in Developing Countries: A Review of the Evidence." *Pediatrics* 2005; 115: 519-617.
4. Committee for Population, Family and Children. "Population and Family Health Project." Vietnam Demographic and Health Survey, 2002. Hanoi, September 2003.
5. Hoa DP, Nga NT and Lars Ake. Time Trends in Child Mortality in Different Socio-Economic Groups during 1970-2000 in Ba Vi District, Vietnam (unpublished).
6. Hoa DP. "Neonatal Morbidity and Mortality at Hospital Level in Vietnam." *Journal of Medical Research*. Ministry of Health, Hanoi Medical University 2005; 35: 36-40.
7. Health, Nutrition, Population and Poverty, Vietnam 2000. World Bank.
8. Vietnam Population Census 1999.
9. Ministry of Health. Health Statistics Year Book 2003, HSID Planning – Finance Department.
10. Vietnam National Health Survey 2001-2002/E4, SCB Statistics Sweden, International Consulting Office, September 2003.
11. Report on Units for Newborn Care in Southern Viet Nam. Children's Hospital No 1, 2004.
12. "First Step in Applying the Issuance of Instruction 4 to Enhance Newborn Care to Decrease Neonatal Mortality: Difficulties and Solutions." Children's Hospital No 1.
13. Baseline Survey Report: Provision and Utilization of Reproductive Healthcare Services 2003 in 12 Provinces. UNFPA, Hanoi 2003.
14. Hoa DP and Khanh NC. "Organization, Equipment and Supply for Pediatric Emergency Care: Current Situation Analysis." *Journal of Medical Research*. Ministry of Health, Hanoi Medical University 2005; 35: 36-40.
15. Maternal Mortality in Vietnam 2000-2001: An In-Depth Analysis of Causes and Determinants. World Health Organization, Western Pacific Region.
16. UNFPA. BYT-DA VIE/01/PI0. Communication Materials for Implementation of the Reproductive Health National Guidelines.
17. Annual Report of National Hospital of Obstetrics and Gynecology, 2004-2005.

18. JICA Reproductive Health Project in Nghe An. Traditional Beliefs, Customs and Practices Surrounding Care for Pregnancy and Delivery among Ethnic Women in Nghe An Province. Hanoi, March 2005.
19. Ministry of Health. National Standards and Guidelines for Reproductive Health Care Services. Hanoi, 2003.
20. State of the World's Newborns Vietnam. Department of Reproductive Health, Ministry of Health and Save the Children USA, January 2004.
21. PCPNC: Essential Newborn Care, WHO.
22. Comparison of Cord Care Methods for Newborns in Children's Hospital No. 1, HCMC and Tra Vinh Provincial Hospital.
23. Danielsson N, Hoa DP, Thang NV, Vos T, Loughnan PM. Intracranial Haemorrhage due to Late Onset of Vitamin K Deficiency Bleeding in Hanoi Province, Vietnam. *Arch Dis Child Fetal Neonat* Ed. 2004 Nov; 89(6): F 546-50.
24. Report on Units for Newborn Care in Southern Viet Nam. Children's Hospital No 1, 2004.
25. Huong DTT. Relationship between Birth Weight, Temperature and Apgar Score with Neonatal Death. Haiphong 1996-1997 Scientific Conference Hanoi Medical School IV, 1998.
26. National Institute of Nutrition. 2000 National Study on Nutrition. Medical Publishing House, Hanoi, 2002.
27. National Institute of Nutrition/UNICEF. Vietnam Nutrition Situation in Vietnam during 3 Years: 2000-2002. Medical Publishing House, Hanoi, 2003.
28. National Institute of Nutrition/UNICEF. Maternal and Child Nutrition Situation in 2002. Medical Publishing House, Hanoi, 2003.
29. Ministry of Health. Breastfeeding Program: Activity and Evaluation Reports in 1998, 1999, 2000, 2001, 2002.
30. National Institute of Nutrition/UNICEF. Maternal and Child Nutrition Situation in 1999. Medical Publishing House, Hanoi 2000.
31. Stina Almoroth et al. Study to Guide Adaptation of Global WHO/UNICEF/UNAIDS Guidelines on HIV and Infant Feeding for Vietnam. NIN/UNICEF, Hanoi, 9/2004.
32. Arun Gupta *et al.* Report on Assessment of Breastfeeding Policy, Promotion and Practice in Vietnam. NIN/UNICEF, Hanoi, 2004.
33. WHO/UNICEF Global Strategy for Infant and Young Child Feeding. WHO, Geneva, 2004.
34. UNICEF and WHO. Low Birth Weight: Country, Regional and Global Estimates. UNICEF, New York, 2004.
35. Ministry of Health. Health Statistics Year Book 1990-2003.
36. Hoa DP. Risk Factors for Low Birth Weight and Perinatal in Northern Provinces of Vietnam. PhD Thesis 2000, Hanoi Medical School.
37. Cu Thi Minh Hien. Prevalence of Low Birth Weight and Risk Factors in Ha Tay Hospital. MA Thesis 2002, Hanoi Medical School.
38. Low Birth Weight Status and Related Factors in Da Nang in 2001-2002.

39. Tran, Sophia and Dao Ngoc Phong. "Study of Low Birth Weight in Can Tho Province." The Third Scientific Conference, Hanoi Medical School.
40. Ministry of Health. Report on HIV/AIDS, December 2004.
41. The National Committee for AIDS, Drug and Prostitution Prevention and Control. The National Strategy on HIV/AIDS Prevention and Control in Vietnam from 2010 to 2020.
42. Ministry of Health. Report on the Sentinel Surveillance 1994-2004.