Georgia Perinatal & Neonatal Project

Master Plan

MEDICAL RESEARCH INFRASTRUCTURE DEVELOPMENT
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Note:
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Also, questioners were sent out to 20 health professionals for review practical aspects of the Master Plan do ability and their responses contribute to the preparation of this document.

List of Acronyms and Abbreviations

AHIP	Affordable health insurance program
ANC	Antenatal Care
BBP	Basic Benefit Package
CEE	Central and Eastern Europe
CIS	Commonwealth of Independent States
CME	Continuing Medical Education
EBM	Evidence based Medicine
ECMO	Extra Corporeal Membrane Oxygenation
EU	European Union
EU15	European Union 15
GDP	Gross Domestic Product
GoG	Government of Georgia
GPNP	Georgia Perinatal Neonatal Project = also a shortcut for the Perinatal and Neonatal Health Care Development Project
HeSPA	Health and Social Programs Agency
IMR	Infant Mortality Rate
IP	Implementation plan of the Master Plan


IT	Information Technology
MAP	Medical Assistance Program for the poor
MDS	Minimal Data Set
MoLHSA	Ministry of Labor, Health and Social Affairs of Georgia
MMR	Maternal Mortality Rate
MoF	Ministry of Finance
MoED	Ministry of Economic Development
MOCTaF	Master Plan Overseeing and Control Task Force
MOU	The Memorandum of understanding signed on August 2009 by the Georgian government, through MoLHSA, UNICEF, the National Reproductive Health Council of Georgia and SMC
MP	Master Plan
MSRA	Medical Service Regulation Agency
NCDCPH	National Center for Disease Control and Public Health.
NICU	Neonatal Intensive Care Unit
NMR	Neonatal Mortality Rate
NGO	Non Governmental organization
NRHCG	National Reproductive Health Council of Georgia
OECD	Organization of Economic Cooperation and Development
OJT	On the Job Training
PA	Professional Association
PC	Personal computer
PHC	Primary Health Care
PHIC	Private Health Insurance Company (Plural = PHIC's)
PN	Perinatal-Neonatal
PMR	Perinatal Mortality rate
PPP	Purchasing Power Parity
RN	Registered Nurse
SMC	Medical Research Infrastructure Development and Health Services Fund by the Sheba Medical Center, Israel
SRAMA	State Regulatory Agency of Medical Activities

UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USCE	Unified State Certification Exam
VLBR	Very Law Birth Rate
WCC	Women consultation center
WHO	World Health Organization

Executive Summary

Mother and child health is of prime importance for any country and its outcomes serve as one of the main indicators of the quality of the entire health system. The independent Republic of Georgia has prioritized maternal and child health in the future planning of the entire health system. This Master Plan concentrates on the issues of pregnancy, labor and the early period of the neonate, namely the periods of Perinatal and Neonatal care. It is the conclusion of a combined effort by the Georgian Ministry of Labor, Health and Social Affairs, and Sheba Medical Center of Israel.

The long term goals of the Master Plan are to improve the outcomes of mother and child health in Georgia. This can be divided into two components:

- **Reducing maternal, perinatal and infant mortality rates** to the levels of those in developed world.
- **Reduce inequalities** among the various subpopulations of Georgia in maternal and neonatal mortality rates by 70% as compared to current outcomes.

We chose as "key areas of work" several main issues which must be tackled in order to achieve the Master Plan's goals. They are listed in a conceptually logical order as follows: (1) Policy; (2) Financing; (3) Organization of services; (4) Infrastructure; (5) Human resources, physicians and nurses; (6) Quality; (7) Information and information systems; and (8) Special populations

For each of these, the present situation was analyzed and final goals (expected outcomes) as well as interim milestones were defined. In addition, strategies for achieving the final goals are suggested. These strategies are the recommendations of the Master Plan.

The Implementation Plan, integrated into this document, is a practical plan to transform the recommendations into reality by converting them into gradual and workable steps, whilst taking into account budgetary constrains, professional capacity and other variables potentially affecting implementation.

A Master Plan Overseeing and Control Task Force (MOCTaF) is recommended. MOCTaF will have the responsibility of monitoring and assessing the advancement of the Implementation Plan and of producing periodic reports submitted to the steering committee and MoLSA. MOCTaF may also suggest amendments to the Implementation Plan and in some cases to the Master Plan, if required in order to achieve the final goals of the plans. The final decision making will be done by MoLHSA.

Current situation

Health policy

Major policy decisions, already made by the Georgian government regarding the health sector include:

- Provision of basic medical services for all Georgians.
- Regulations and control by the government.
- Major financing based on private insurance plans.
- Government financed safety-net for people below the poverty line and other unprivileged populations as well as for special medical conditions.
- Large scale privatization of health care providers and facilities.

Health policy – Points of strength - (1) Free basic perinatal care for all; (2) Policy attractive to private investments. (3) Voluntary insurance as the major mechanism of financing services; (4) Emergence of the private health insurance companies as a major power in the health care system.

Health policy – Points of weakness: (1) Weak regulation negatively affects quality of services: (2) Private investors may invest only in densely populated areas and in profitable fields of the health system; (3) A health system based on private investment will remain fragmented and uncoordinated.

Economics and financing

Economics and financing – Points of Strength: (1) A rising economy with a perceived future high growth rate; (2) A market based macro-economic policy; (3) privatization of health care services.

Economics and financing – Points of Weakness: (1) Low GDP results in low health expenditure in absolute terms; (2) Low public expenditure for health (around 20%); (3) World financial crisis and the conflict with Russia slow down in Georgian economy and investments: (4) Lack of financial incentives for health care professionals to practice in rural and remote areas.

Infrastructure of hospitals, maternities and neonatal units

The availability of adequate infrastructure is a fundamental and irreplaceable pre-condition in any attempt to provide acceptable health services.

Infrastructure – Points of strength: (1) The new hospital plan by the government includes integration of Maternities into multi-profile hospitals;(2) Some renovation of perinatal facilities, mostly by the private sector. (3) Some governmental allocation for renovation of hospitals, essentially directed to those which are supposed to remain under state ownership.

Infrastructure – points of weakness: (1) Excessive number of maternity houses and wards. (2) Deteriorated physical conditions of some Maternities; (3) Unsatisfactory status of medical equipment (absent or primitive); (4) Unsatisfactory status of neonatal units, especially NICUs; (5) Existence of stand-alone maternities and neonatal units.

Organization and delivery of services

The policy of privatization of health services combined with the concept that market forces will create a working and efficient perinatal system has not yet proven itself and only time will tell its future success.

Antenatal Care (ANC)

Antenatal care plays an important role in preventing maternal, fetal and infant mortality and complications of pregnancy.

ANC – Points of Strength: (1) An organized and working net of ANC facilities in WCCs; (2) A high level of utilization by the public; (3) Free basic ANC.

ANC – Points of weakness: (1) Low level of competency especially in peripheral regions; (2) Access difficulty in remote areas: (3) Shortage of professionals in rural areas.

Maternity houses and wards

In 2009, 95 maternity houses and wards operated in Georgia, many of them undertaking a very small number of deliveries.

Maternity houses and wards – points of strength: (1) Most costs are covered by government programs; (2) Number of facilities has decreased in recent years.

Maternity houses and wards – points of weakness: (1) No organized stratification of Maternities; (2) Lack of standards of staffing and equipping Maternities.; (3) Lack of ability to deal with complicated deliveries

Neonatal Care

The neonatal care services are largely characterized by antiquated physical infrastructure and medical equipment.

Neonatal units – Points of strength: (1) Fair clinical competence of the professional staff in the major tertiary level units in Tbilisi.

Neonatal units – Points of weakness: (1) An unsatisfactory stratification of the system – the major problem; (3) Low level physical conditions of some of the tertiary units; (4) An extreme shortage of respirators and incubators; (5) Existing equipment is old, often obsolete and poorly maintained; (6) Insufficient clinical competence in many neonatal units; (7) Tertiary care units in Gori, Kutaisi and Batumi lack some equipment and the competency to function as Level III units.

Human resources

The two major sectors in health care delivery are physicians and nurses

Physicians - Points of Strength: (1) An existing system for the regulation of physicians; (2) Good theoretical knowledge. (3) An understanding and acceptance of the need to improve the system.

Physicians – Points of weakness: (1) An excessive number of physicians many of whom with poor training and limited clinical experience. (2) A shortage of

teaching hospitals; (3) A shortage of good quality residency programs; (4) A shortage of gynecologists and neonatologists outside of the major cities.

Nurses – points of strength: Introduction of an academic program of nursing and midwifery.

Nurses – points of weakness: (1) An acute crisis of the profession**;** (2) Low quality training with very few clinical components. (3) Shortage of higher specialization courses.

Quality

Quality – Points of strength: (1) There is some awareness of the need for quality services; (2) Some professional societies begin to take responsibility of quality issues. (3) MoLHSA endorsed some clinical guidelines in PN.

Quality – points of weakness: (1) There is no atmosphere of quality management and care in the PN field; (2) Only a few guidelines and protocols have been approved and endorsed; (3) Safety is not prioritized; (4) No Quality measures are required from caregivers.

Health Related information and Information Systems

Information - Points of Strength: (1) Statistical data on epidemiology and utilization of services are collected and published by MoLHSA; (2) The government is planning a national computerized information system; (3) Citizens have a unique identification numbers; (4) All newborn infants receive an ID number before discharge from neonatal units.

Information - Points of Weakness: (1) No MDS for PN patient clinical information; (2) No sharing of clinical information among care givers; (3) No culture of documenting and reporting clinical events, especially of mishaps; (4) Shortage of basic computer equipment in health facilities; (5) Lack of basic computer skills.

Special Populations

A subpopulation is defined as special if under the current health care conditions its measured health outcomes, such as life expectancy, child mortality, and maternal mortality are significantly worse than the rest of the population.

Ethnic minorities

Points of Strength: (1) Legal framework secure minority rights ;(2) A positive Government attitude towards minorities.(3) A topic which is likely to attract external financing.

Points of Weakness: (1) Low socio-economic status; (2) Concentrated in monoculture regions; (3) Language discrepancies limit access to personnel and facilities; (4) A shortage of native language speaking health care personnel.

Inhabitants of remote areas

Points of strength; (1) Most women give birth outside their residential region; (2) Availability of helicopter transportation in some emergency situations.

Points of weakness: (1) Low population density; (2) Difficult transportation, especially during winter months; (3) Undeveloped health infrastructure (4) Shortage of health personnel.

Assumptions

Assumption regarding demographics, statistics and data collection:

- The number of live births will increase to about 70,000 per year
- Improved reporting and registering of births will result in an initial increase in the numbers and rates of maternal and neonatal mortality and morbidity.
- Improving survival and length of hospitalization of premature infants will result in an increased requirement for neonatal care facilities.

Assumptions related to general and health policies

- The government's policy of affordable health coverage for all Georgians will continue.
- Health insurance will be provided mainly by the Private health insurance companies which will also operate many health care facilities.

Assumption related to economics and financing

- The GDP of Georgia is expected to grow by 8% per annum in the next 5 years (Economy Watch 2011). We have assumed a similar growth rate for the entire period of implementation of the Master Plan.
- The average health expenditure will stay at a range of 8.0-8.5% of the GDP.
- The government will continue to provide financial coverage for mother and child care, including antenatal care, labor and delivery and neonatal care.
- The share of the private health insurance companies in health care financing will continue to grow.

Assumptions related to the organization of the health care system

- The Government of Georgia will deepen its involvement in the regulation of the health care field.
- The Government of Georgia will take an active role in planning and executing the stratified system of PN.
- The PHIC's will in time, become the major or one of the major players in several aspects of the health care market including: Financing, ownership of health care facilities, employment of professional staff and enforcing clinical quality standards.

Major Master Plan Recommendations

The topics which should be the most highly prioritize in the execution of the Master Plan are: Decreasing the number of Maternities, further development information system (mainly reporting and access of clinical data to all levels of care givers), and training of physicians and nurses. Monitoring the execution of the Implementation Plan should start as soon as possible.

The recommendations are organized in the order they appear in the Master plan.


Health Policy Recommendations

- Continue the policy of a safety net for financing of the unprivileged, combined with a voluntary insurance for remainder of the population. Consider mandatory health insurance in the future.
- Increase regulation of professional education and training of health care personnel.
- Increase regulation and monitoring of health care performance.
- Delegate more roles in the health care system to the Private health insurance companies by transferring additional Governmental programs to their responsibility.
- Adopt the stratified model of the Perinatal-Neonatal system.
- Set and enforce strict reporting policy of Perinatal and Neonatal MDS.

All health policy recommendations are important and must be considered in within the next 1-2 years. It is clear that their execution might take a longer period of time.

Organization of Services Recommendations

The Stratified Model of PN services

- The suggested stratified model comprises 4 levels of antenatal care, 2 levels of Maternity care (which include labor, delivery and post partum beds) and 2 levels of Neonatal care. It also suggested that maternities and neonatal units be located in the same institution and that maternities be incorporated within multipurpose hospitals.
- The levels of ANC facilities are as follows
    - Level A – Routine ambulatory ANC by WCC or PHC
    - Level B – Ambulatory High risk Pregnancy clinics
    - Level C – High Risk Pregnancy beds in Level II Maternities
    - Level D – High Risk Pregnancy beds in Level III Maternities

- The Levels of Maternities are as follows
    - Level I – Maternities with minimal facilities which can handle only absolutely normal deliveries. Such maternities are not recommended and should only be established in remote, isolated areas for women who fail to arrive to more advanced maternities.
    - Level II – Maternities which can handle all normal and high risk pregnancies and deliveries except few very complicated cases. They must comply with all standards of Level II Maternities as documented in Annex B. Level II Maternities are recommended to form the backbone of the Maternity services.
    - Level III – Maternities which can handle all normal and high risk pregnancies including those requiring the expertise of other specialties not existing in Level II Maternities. They must comply with all standards of Level III Maternities as documented in Annex B. Only 2 Level III Maternities are recommended in Georgia.
- The Level of Neonatal Units are as follows:
    - Level II – Neonatal units which can handle all neonates except these which require neonatal intensive care or preterm neonates below 1,000 gr. Level II Neonatal units are recommended to be the backbone of the Neonatal services in Georgia. They must comply with all standards of Level II units as documented in Annex B
    - Level III – Neonatal units which include neonatal intensive care units and are able handle all term and preterm neonates. 6-7 Level III Neonatal units are recommended: Tbilisi – 3, Gori – I, Kutaisi – 1, Batumi – 1, and possibly an additional unit in Telavi. All of these must comply with all Level III standards as documented in Annex B

Recommendations for inpatient beds

- **Maternity Beds:**

High risk and complicated pregnancy beds – 2 per 1000 deliveries **(140 Beds)**

Post partum Beds - 12 per 1000 deliveries **(840 Beds)**

Delivery room beds – 140-170 beds (depends on the volumes of deliveries in each maternity. Smaller ones require more beds per 1000 deliveries than larger units.

- **Neonatal care beds:**

Intensive care - 1 per 1000 deliveries (**70 Beds)**

Intermediate care- 2 per 1000 deliveries (**140 Beds)**

Continuing care (growing preterm infants) - 3 per 1000 deliveries **(210 Beds)**

Total Special Care Beds - 6 per 1000 deliveries (**420 Beds)**

Total Normal Infant Care Cribs -12 per 1000 deliveries **(840 Cribs)**

Manpower recommendations

- **Physicians**
  - A uniform curriculum for basic training for all gynecologists and pediatricians/neonatologists.
  - Train gynecologists and neonatologists extensively and repeatedly, especially emergency topics and rare acute complications.
  - Train physicians to use clinical guidelines and protocols to ensure standardized clinical activities.
  - Determine measures to encourage movement of physicians to rural and remote areas to practice medicine.
  - Reorganize the definition of neonatologists so that they will be permitted to perform all procedures required to function in the neonatal units and comprehensively train them in the use of these procedures. (2)
- **Nurses**
  - Continue the reform in nursing education by enhancing academization of the profession.

- Offer the academic nurses higher professional responsibility.
- Keep some of the non-academic schools for second lower level nurses.
- Regulate the nursing profession, including nursing schools of all levels
- Set incentives for high quality nurses to practice in rural and remote areas.

Quality Recommendations

- Further develop standards, guidelines and indicators, all based on EBM, for health care services.
- Increase transparency in the system to enable MoLSHA, Private health insurance companies and citizens a fair judgment on the quality of services
- Add quality measures to the requirement of the buyers in the system

Information and Information Systems Recommendations

- Create uniformity in clinical data by establishing a minimal data set (MDS) for PN for clinical use and reporting.
- Computerize data acquisition and the reporting system.
- Advocate the use of Electronic Medical Records (EMR) in PN.

Special Populations Recommendations

- **The Azeri and the Armenian minorities**

- Improve infrastructure and accessibility to health care services.
- Encourage minority youngsters to enter health professions.

- **Inhabitants of Remote Areas**

Model for PN services in remote areas

- Basic antenatal care – by combined local clinics.
- Second level antenatal care for complicated pregnancies – undertaken outside of the region (transportation provided and paid for by the insurer or governmental program)
- All deliveries – performed outside of the region.
- An efficient ambulance service.


Implementation Plan

Many MP's have not been carried out because of the lack of a detailed sustainable implementation plan which includes the following components:

(a) A body to supervise and report on the progress of the IP;

(b) A clear vision of the final goals and milestones translated into specific feasible targets;

(c) A mechanism to oversee, monitor and adapt the MP and IP to the continually changing internal and external conditions which affect the health care system in general and especially the PN field;

(d) A strategic commitment to the effort of improving the PN field.

A. Master-Plan Overseeing and Control Task Force - MOCTaF is suggested as the professional body established to oversee, monitor and adapt the Master and Implementation plans over time. It consists of two arms: (a) A technical unit which will collect data, perform basic analyses, write and publish the annual reports; (b) A steering committee, whose task will be to oversee the IP and suggest adaptations and amendments to the MP and/or IP if necessary.
B. Final goals and milestones were prepared and inserted into the IP as well as detailed timetable for the execution of each recommendation. These are organized methodologically in tables which can be found in chapter 8.5 of the document. They also contain suggested responsibility and priority for each recommendation.
C. Four partners have expressed their commitment to the execution of the MP by signing the Memorandum of Understanding regarding the capacity development of PN field in Georgia: MoLHSA, UNICEF, NRHCG, and SMC of Israel.

Introduction

Since its independence on 1992, Georgia has undergone a major social change to become a free democratic country able to support its people economically and provide them with an acceptable standard of living and several fundamental human rights; the provision of health care is a fundamental one. Mother and child care is unique and sensitive since it touches the deepest emotion of human nature and is essential for the mere existence of society. In the last 15 years major improvements have been made in reducing maternal and neonatal mortality and morbidity, but the outcomes are still not satisfying and there is still a long way to go to achieve standards and outcome similar to those of the developed countries such as EU15 or OECD members.

The significance of the perinatal and neonatal field is even more fundamental in Georgia since its demographics are negative with a rapidly diminishing population and a fertility rate of 1.4 births per women which is among the lowest in Europe, and much lower from of the fertility replacement rate of 2.1 births per women. It is true, that there are many reasons for this low fertility rate, predominantly social ones resulting from political and financial uncertainty combined with a social trend for smaller families, and, in addition sub standard perinatal care which makes pregnancy and delivery a risky endeavor for many women.

A governmental policy of promoting mother and child programs is, therefore, essential in order to stimulate a positive demographic trend. Moreover, it will be a social sign of hope and revival so needed in the current, cynical and somewhat depressed national atmosphere.


1. Master Plan Goals

The actual long term goals of the Master Plan are to improve mother and child health in Georgia. This can be divided into two components:

1.1. Reducing maternal, perinatal and infant mortality rates to the levels of those in developed world. The values of these parameters in most EU and OECD countries are currently as follows:

- Maternal Mortality rate around 6-8/100,000 births.
- Perinatal Mortality rate around 4-6/1,000 births.

It is expected that future values of MMR, PMR and NMR in the developed countries will not differ much from current ones since most mortality cases now are not preventable.

1.2. Reduce inequalities among the various subpopulations of Georgia in MMR and NMR by 70% as compared to current published statistics*.

* Taking into consideration, that the reported, and therefore the published data may not be accurate.

2. Means

A national social policy which specifically encourages the population to bear and raise children to maintain and increase the Georgian population

Universal access to perinatal care for all pregnant women.
Universal access to safe and well equipped maternities units.
Universal access to safe and well equipped neonatal facilities.
Updated educational institutes for health care professionals
Well trained and experienced Perinatal and Neonatal related health care professionals (physicians, midwives and nurses).
Quality care delivery mechanisms
Acceptable physical conditions of ambulatory and inpatient facilities for mother and child care
Allocation of resources as determined by the national authorities
Reliable, detailed and well analyzed information delivered via a sophisticated system, enabling clinical data transfer among caregivers, reporting to the authorities and providing transparent aggregate data to the general public.

It should be noted that a universal access, pregnancy related health care policy, exists at present but is only partially implemented. This statement will be analyzed later on in this document. Furthermore, in regards to the constant ongoing decrease in population size, emergency measures aiming to encourage larger families should be enacted.


3. Current Situation, Problems and Analysis

3.1. Health policy

Major policy decisions, already made by the Georgian government regarding the health sector include:

- Provision of basic medical services for all Georgians.
- Regulations and control by the government.
- Major financing based on private insurance plans.
- Health care services delivery mostly by independent facilities and/organizations which can be both “for profit” as well as “not for profit” in nature.
- Government financed safety-net to people below poverty line and other unprivileged populations.
- Government financed plans for special medical conditions.
- Large scale privatization of health care providers and facilities as well as human resources.
- Relatively low level regulatory mechanisms based on a belief that the market forces will best regulate prices, quantity, and quality of care.

In consideration of the basic idea of free market policy as a fundamental concept, we also see its advantage as a mean for the introduction of private resources into the health system which requires large scale renovation of the health care infrastructure, especially hospitals and other facilities. However it must be noted at this stage that free market economics should be implemented very cautiously in the health care market for several reasons, some relate to the "market failure" nature of health care resulting predominantly from the asymmetry of information between buyers and sellers in this kind of the market. In addition, free market economics does not deal with equity, which is a major issue in democratic societies, with quality of care


and with issues related to comprehensiveness of the system such as the supply of clinical fields for the training of residents and medical students and nurses.

Market driven economics may result in an excess capacity of very fragmented services. Good quality health care cannot a priori be assumed to result from market forces and interests and must be enforced by public agencies. Furthermore, a fragmented, privately owned health care cannot provide the clinical environment necessary for medical students and the teaching facilities will in all likelihood further deteriorate.

Although, mother and child care are covered by the government in aspects related to pregnancy and neonates. However, the issues of quality of care and professional CME are however not well regulated in the free market environment. Finally, information required for national planning and decision making and for national level quality control may not be delivered in such environment unless actively enforced by the regulatory agents.

3.1.1. Health policy – Points of strength

- Basic health services for all
- Free basic perinatal care for all
- Policy attractive to private investments
- Voluntary insurance as the major mechanism of financing services
- Setting the private PHIC's as a major power in the health care system

3.1.2. Health policy – Points of weakness

- Weak regulation negatively affects quality of health services
- Weak regulation negatively affects quality of educational institutes
- Private investors invest only in potentially profitable fields and as a rule prefer large urban, densely populated areas to remote, scarcely populated regions.

- A health system based on private investment will remain fragmented and uncoordinated.
- A health system based on private investors will provide an excess amount of services in profitable fields and a shortage of services in the less profitable ones.

3.2. Economics and financing

The resources allocated to health care are the key issue in defining Georgia's ability to determine the rate of improving its medical system. It is usually measured as the percentage of the GDP spent on health, a measurement that reflects the relative importance of the field to the government and citizens in the context of total spending. Georgia spends 8.5% of the GDP on health which is in the range of spending of most developed countries. However, the actual care delivered and the rate of renovating the system is dependent on the absolute number of dollars allocated, corrected to its purchasing power. The Georgian GDP, which was equivalent to PPP of US$ 381 in 2007, is very low in comparison to those of EU15 or OECD countries, allows only for basic services and hardly for any capital investment. Another major financing issue is the very low proportion of public spending on health, which amounts only to around 20% of the total health expenditures. This is utilized mainly for several governmental programs aimed to serve as a safety net for the most vulnerable population, children and for costly medical problems such as cancer. The remaining 80% of health spending is private, mostly out of pocket and is spent at the point of service.

It is, therefore, understandable that the government's decision to privatize most of the health care facilities, arises not only from it's free market orientation but also from the understanding that only the private sector can raise the resources needed for the renovation of the physical health


infrastructure, mainly hospitals and healthcare facilities. In the context of Georgian traditions is believed that only the private sector could efficiently manage the system. However, only a few facilities were actually renovated by the private sector, mainly as a result of the global recession and the armed conflict with Russia in 2008, which drove down Georgia's economic progress and diminished foreign and local investments for about 2 years. The older governmental 100 hospitals' plan did not materialize because of the same downturn of the economy. Only at the beginning of 2010 did the financial indicators show the some signs of economic recovery. It is still doubtful however, whether, when and to what extent, major private investment will divert to health care.

Another problem of an unregulated, private health care market is its focus on specific, isolated, high profit, high technology services, with no responsibility to the system as a comprehensive entity. In the hospital sector this policy is beginning to show in the breaking up of major hospitals into several discrete services with no central management or central responsibility to the patient. As previously noted, such a policy does not have any incentive for teaching and residency training.

The lack of substantial resources over the next few years means that any part of the master plan which requires large scale investment will have to be postponed to the later years of the MP unless it is highly prioritized. On the other hand, it must be noted that infrastructure build-up or renovation related to this Master Plan, namely maternities, neonatal units, nurseries and the equipment required for them, are limited in number and relatively inexpensive. Therefore, we assume that the Master Plan financing will impose an acceptable burden on the government, the Private Health Insurance Companies (PHIC), and the public.

Other parts of the MP which require a possibly significant allocation of resources are: (a) Creating incentives for gynecologists and midwives to

establish their practices in rural and remote areas, and (b) Creating an IT infrastructure across the country. The financial resources needed for the incentives can be offset by the expected decrease in the total number of health care workers resulting from closure of the excessive number of health facilities. The IT infrastructure is presently considered as a high priority national issue and budgeting is planned for the near future.

3.2.1. Economics and financing – Points of Strength

- A rising economy with a perceived future high growth rate
- A preferred country for investment
- A market based macro-economic policy
- A policy of privatization of health care services

3.2.2. Economics and financing – Points of Weakness

- Low GDP with an average percentage of health expenditure resulting in low health expenditure in absolute terms
- Low public expenditure for health (around 20%) and high private expenditure for health (80%), mostly out of pocket.
- Economy negatively affected by the armed conflict with Russia which has not yet been solved. Decreased GDP and foreign investments.
- Economy negatively affected by the world wide financial crisis which slowed down foreign investments.
- A policy of privatization of health care services
- Lack of financial incentives for health care professionals to practice in rural and remote areas.

3.3. Infrastructure of hospitals, maternities and neonatal units

The availability of adequate infrastructure is a fundamental and irreplaceable pre-condition in any attempt to provide acceptable health services. The term “infrastructure” relates to the buildings, the physical conditions within them,

major medical and non-medical equipment, transportation equipment and relevant physical conditions outside the medical facilities but essential for their function. These include roads, electricity, water supply, communication lines and internet access.

At present there are a large number of hospitals and maternity centers (more than 100 maternities). Most hospitals and maternity units are in severely deteriorated physical condition and require major renovation and in some case complete rebuilding. Infrastructure is often antiquated with a lack of piped medical gases, vacuum, air conditioning and in some instances hot water or running water at certain times.

Curatio International Consulting and UNICEF made, during 2006, an assessment of the status of perinatal facilities in Georgia. Their findings were alarming. For example, 10% of the maternities did not have running water at all and 40% did not have running hot water (Chkhatarashvili K et al, 2006). Some of them do not have a functioning heating system or functioning elevators. Such facilities are not suitable for taking care of parturients and newborn infants.

There is a marked shortage of heavy medical equipment. Existing equipment is old and inadequately maintained. Medical equipment is not standardized which makes maintenance difficult and expensive.

Maternity units are short of ultrasound equipment, delivery room monitors, resuscitation equipment for mother and neonate, blood products and anesthesia machines. Surgery theatres are, in most cases old and anesthesia equipment is outdated and unsafe.

There is a shortage of basic equipment required for neonatal intensive care including, ventilators, cardiac monitors, oxygen saturation, blood pressure monitors, infusion pumps, incubators etc.

There are inadequate laboratory and imaging facilities in most hospitals and most do not have appropriate blood bank facilities.

Some basic conceptual disadvantages of the perinatal infrastructure include the existence of maternities and neonatal units outside the framework of a general hospital, thus lacking many, if not all, of the emergency facilities of such a hospital, including intensive care units, imaging equipment, a blood bank and laboratory facilities, specialists in general and specific surgery etc. All these are essential in cases of acute labor and delivery complications. Also, in some cases the tertiary level maternities do not have equivalent neonatal units and vice versa, necessitating the transfer of complicated neonates and premature babies from one facility to another.

The development of efficient and high quality maternity units will require the gradual abolition of a large number of smaller units and give preference those which have a higher volume of deliveries and are already part of a general hospital. This process will further increase the delivery volume of each maternity department and will create a safer clinical environment for the treatment of both mother and infant.

3.3.1. Infrastructure – Points of strength

- The existence of 2 emergency transfer units (the Catastrophe Centers)
- A few renovated facilities, mostly with financial aid from foreign sources.
- Some governmental allocation for renovation of hospitals, essentially directed to those which are supposed to remain under state ownership

3.3.2. Infrastructure – points of weakness

- Excessive number of maternity houses and wards

- Deteriorated physical conditions to the point of an inability to provide minimal therapeutic conditions (running water or heating)
- Unsatisfactory medical equipment status (absent or primitive) in delivery rooms and operating theaters.
- Unsatisfactory status of neonatal units, especially NICUs
- Maternities separated from neonatal units
- Stand alone maternities and neonatal units
- Absence of a tertiary level neonatal unit in eastern Georgia
- Rebuilding or renovation of infrastructure is the most expensive part of the MP.

3.4. Organization and delivery of services

The policy of privatization of health services combined with the concept that market forces will create a working and efficient perinatal system has not yet proven itself and only time will tell its future success. This chapter will concentrate on the current situation and its analysis, with the notion that the system is now in a middle of a change process which started only few years ago, and that its basic goals and assumptions are updated constantly within the implementation process.

3.4.1. Antenatal Care (ANC)

Antenatal care plays an important role in preventing maternal, fetal and infant mortality;

Among its objectives are:

- Assessment of pregnancy duration and filling in relevant documentation
- Routine supervision of healthy pregnant women
- Assessment of risks of pregnancy complications
- Early detection of complications and risks to mother and fetus

- Special supervision of high risk pregnancies and in case of necessity, timely referral for relevant care (investigations, treatment) at appropriate level, according to proved guidelines and protocols
- Education of pregnant women and their families.

Among the women, considered to be low-risk at the early stage of pregnancy, almost 50% subsequently develop some kind of pregnancy and/or delivery complications. Thus, routine antenatal care visits are mandatory for every pregnant woman and risks should be reassessed at each of these visits.
For every citizen of the country, antenatal care should be geographically and financially accessible, culturally acceptable, and appropriate for the health and family needs of the woman.
Continuity of care: pregnant, delivering and post-partum women and their newborns should be provided with appropriate care both locally, close to their place of living, as well as in higher level facilities if necessary.

Ambulatory ANC in Georgia is provided in stand alone Women's Consultation facilities or in ANC clinics within Maternity houses or hospitals. Any pregnant woman is entitled to four free ambulatory pregnancy follow-up visits, but several of them do not use this privilege either because of difficulties in access and especially because of a lack of understanding of their importance for the consequences of pregnancy.

One of the reforms discussed now by the government is in ANC and relates to the identity of the actual care giver. As noted earlier, the women consultation centers (WCC) are staffed by gynecologists with minimal updated clinical information and experience and a low level of incentive; partially related to their poor financial income and partly to the quality of people who chose this job to start with. Furthermore, the WCCs are very ineffective economically and their role might better be fulfilled by other components of the health system.

In areas where the supply of gynecologists is limited, antenatal care is performed by primary care physicians and in some cases even primary care nurses. Based on this experience one of the proposals is to abolish the WWC system and transfer their responsibilities to the primary care system throughout the country. Some of the resources saved can be directed to the primary care physicians for improving their training in ANC and to strengthen their poor income.

While primary care professionals supply quite acceptable level of ANC in several countries, any step in this direction in Georgia must be taken cautiously since the quality of care of the primary physicians is also far from satisfactory. The addition of responsibility in the unknown field of ANC could be a failure. It must be also stressed that the basic ANC is changing and becoming more demanding since many screening tests for early detection of fetal and maternal abnormalities are beginning to emerge and in several years will become part of the routine ANC.

Another possibility for replacing the WCCs is to offer routine ANC to the primary gynecologists who are proposed to be part of the Primary Care Centers medical team and may be of better clinical quality that those in the WCC.

A major clinical problem of ANC which does not have a solution in the present system is the care of pregnant women in whom some gestational abnormalities have been diagnosed and for the rest of their pregnancy they requiring more intensive and frequent ambulatory follow-up for the rest of their pregnancy .

It is suggested that ambulatory medium and high risk pregnancy follow up clinics will be established in each of the maternities under their responsibility and guidance. These clinics will be staffed by the maternity personnel who have a higher professional capacity than the primary care staff. The

maternities will be able to supply observational inpatient beds for these women in case of need.

In many cases the data accumulated in the ANC medical files are not available to the care givers in the maternities. Furthermore the medical records of the patients are not uniform and in many cases are not completed in full. All pregnant women are entitled to one ultrasound examination during pregnancy but the machine is not available in many of the ANC facilities.

3.4.1.1. ANC – Points of Strength

- An organized and working net of ANC facilities in WCCs
- A high level of utilization by the public
- Free basic ANC

3.4.1.2. ANC – Points of weakness

- Low level of personnel training especially in the rural areas
- Some screening tests are not fully performed
- Access problem in remote areas
- Shortage of gynecologists and nurses in the rural areas
- Medical records are not standard and not always completed.
- Clinical ANC records are not always available to higher levels of PN care
- Shortage of obstetric ultrasound units.
- Absence of basic genetic screening tests.
- Not enough emphasis on health promotion during pregnancy.

3.4.2. Maternity houses and units

In 2009, 95 maternity houses and wards operated in Georgia, most of them delivering a small number of women. Chkhatarashvi K et al (2006) (Table 1) found that in a sample of 30 maternity houses and wards with a total of 27,000

deliveries, only 11 delivered more than 1,000 women, a number which is purportedly the lower limit required in order to maintain professional competence, and 11 delivered less than 500 women. Obstetricians delivered an average of only 60 women per annum with a range of 15-260 deliveries. There is no doubt that adequate clinical experience, quality of care and organized work by protocols cannot be achieved under such conditions. In our opinion, there are several reasons for such a high number of maternities: (a) the desire to give birth close to home; (b) the soviet heritage; (c) a maternity unit is a political asset; (d) the deregulation policy which does not restrict operating of any number of maternities provided that only very basic requirements are fulfilled. Those requirements do not include issues of volume and professional quality. According to the same report, some of these maternities do not have very basic standards such as running hot water or heating and lack basic items of obstetrical equipment.

For the smaller stand-alone maternity units, even the basic help of another colleague professional is often lacking. In the modern world, where transportation is easily accessible there is no justification in endangering women by allowing them deliver in low volume, stand-alone maternities. This should be stressed even more for remote areas where any complication is beyond the expertise of the facility.

Table 1: Average annual number of deliveries per one ob/Gynecologist and Neonatologists.

Source: Chkhatarashvi K, et al (2006)

Code of the medical service provider	no of births during 12 months	No of ob/ Gynecologists	Average annual number of deliveries per ob/gyn	No of Neonatologists	Average annual number of deliveries per neonatologists
1	1813	18	100.7	7	259.0
2	230	15	15.3	10	23.0
3	526	14	37.6	14	37.6
4	726	30	24.2	13	55.8
5	1121	43	26.1	17	65.9
6	4281	77	55.6	17	251.8
7	1335	20	66.8	5	267.0
8	1868	8	233.5	9	207.6
9	3497	64	54.6	15	233.1
10	1567	6	261.2	5	313.4
11	509	12	42.4	7	72.7
12	300	15	20.0	7	42.9
13	1360	16	85.0	8	170.0
14	1243	8	155.4	11	113.0
15	714	10	71.4	6	119.0
16	1178	9	130.9	4	294.5
17	352	9	39.1	4	88.0
18	466	4	116.5	1	466.0
19	823	16	51.4	9	91.4
20	461	12	38.4	6	76.8
21	514	7	73.4	3	171.3
22	614	12	51.2	2	307.0
23	115	5	23.0	1	115.0
24	550	10	55.0	4	137.5
25	1095	9	121.7	3	365.0
26	170	2	85.0	1	170.0
27	153	3	51.0	1	153.0
28	193	4	48.3	1	193.0
29	60	2	30.0	1	60.0
30	40	1	40.0	1	40.0
Total	27,874	461	60.5	193	144.4

On 2009, USAID and Coreform published a report, written by the Perinatal System Strengthening Task Force (USAID, 2009), in which it was strongly recommended that the maternities and neonatal units will be regionalized and stratified into 3 major levels, basic (I level), specialized (II level) and highly-

specialized (III level). This report, as well as a previous one by Curation International (Chkhatarashvi K, 2006) also emphasized the excessive number of perinatal facilities as well as their substandard physical conditions. Regionalization of the perinatal system is an established and proven organizational framework for the improvement of perinatal outcome in developing and developed countries, with a high cost benefit ratio. More detailed information about the stratified concept is presented in chapter 7.3 of this MP

In addition to the inefficiency of the excessive number of maternities, this also increases the shortage of trained personnel and diminishes their clinical experience. We assume that the number of maternities should be cut at least by half

3.4.2.1. Maternity houses and wards – points of strength

- Most costs are covered by government programs.
- The number of facilities has been decreasing in the last years

3.4.2.2. Maternity houses and wards – points of weakness

- No organized stratification
- No standards of expertise required
- No standards of equipment
- No or little sharing of clinical information and patient data between ANC and maternities
- Lack of clinical support services in maternity houses

3.4.3. Neonatal Care

The neonatal care services are largely characterized by an antiquated physical infrastructure and medical equipment, outdated work practices and a lack of modern clinical guidelines. The services are not adequately financed

and a budget for neonatal care in general and neonatal intensive care specifically has not been defined.

The care is fragmented and often not provided in a facility appropriate for the health care needs of the infant. Furthermore inadequate perinatal care of high risk pregnancies further impacts on the provision of neonatal care for these infants.

Tertiary level neonatal units are few and exist in Tbilisi, kutaisi and Gori. Another unit in Batumi is in the process of being upgraded to a tertiary level unit. There is no tertiary level unit in eastern Georgia and it is recommended to consieder stablishing one in the area, preferably, within a multipurpose hospital. The number of tertiary level neonatal units however will remain small (about 6-7 altogether)

All tertiary facilities require more modern and improved equipment, especially respirators, monitors and incubators.

3.4.3.1. Neonatal units – Points of strength

- Fair clinical competence of the professional staff in the major tertiary level units in Tbilisi

3.4.3.2. Neonatal units – Points of weakness

- An unsatisfactory stratification of the system – the major problem
- Low level physical conditions of some of the tertiary units
- An extreme shortage of respirators and incubators
- The existing equipment is old, often obsolete ,unified and poorly maintained
- There is insufficient knowledge and experience in many neonatal units in neonatal emergencies and resuscitation techniques
- Several neonatal units do not use clinical protocols
- Tertiary care units in Gori, Kutaisi and Batumi do not have all the equipment needed to be top level neonatal units and their personnel

require better training in the use of the technologies expected to be introduced

3.4.4. Transport System

A basic but fairly satisfactory maternal and neonatal transport system exists in Tbilisi and Kutaisi and distances and transfer times are relatively short. The system is well organized including appropriate protocols and quality control mechanisms and satisfactory reimbursement.
High quality clinical protocols and guidelines have been prepared in relation to the major neonatal problems. However, these have not been adequately implemented throughout the country and quality control mechanisms do not exist.

In Kutaisi, the number of mobile transportation units for neonates should be increased. The transportation system at present is designed to transfer pregnant women and neonates between medical facilities. This concept is based on the assumption that every woman can arrive at a maternity house or ward within an hour. However, since the country cannot support (both financially and trained personnel) so many maternities, deployment of a denser network of ambulances with the task of moving pregnant women from home to maternities should be considered. Since we believe that the number of hospitals will diminish with time, this ambulance network can provide the same services for other emergency transportations from homes to medical facilities. Such an ambulance service will be less expensive than maintaining a larger number of hospitals.

3.4.4.1 Transportation system – point of strength

- A good and well managed system
- A well defined set of protocols for pregnant women and neonate
- Well staffed

- Well financed

3.4.4.2 Transportation system – points of weakness

- Protocols are not always followed
- One extra transportation unit can be beneficial in the Kutaisi station
- An additional center is required in the east of the country.
- The anticipated decreased number of maternity houses and hospitals will require a denser network of ambulances.

3.5. Human resources

The two major sectors in health care delivery are physicians and nurses. We will discuss both describing the current situation, mainly, those parameters which require major reforms for the goals of this MP. Concerning the physicians we will concentrate on the Gynecologists and Neonatologists without pointing out in details for a wide reform. As for nurses, we believe that the crisis in the profession is very deep and that a thorough reform is essential for the purpose of this MP. We will relate to the following aspects for both sectors: (a) number of professionals; (b) their distribution in Georgia and (c) the quality of the services.

3.5.1. Physicians

The total number of physicians in Georgia was estimated to be around 20,000 in 2005 (MoLSHA statistical department), equivalent to 4.7 physicians per 1,000 inhabitants, one of the highest rates in the world. Moreover, it is estimated that around 2,000 students graduate from about 30 medical schools/faculties each year, but only half of them pass the governmental examination which is currently mandatory for medical practicing licensure, and is required for continuing training for a specialist position. It is estimated that the number of the graduates is about 3-4 times the real need for Georgia in order to maintain the current rate of physicians in the future.

The disproportionately large number of medical schools and faculties is an additional by-product of the policy of privatization and deregulation which includes the academic field. The proliferation in medical schools raises the issue of quality as a prime problem. The quality of physician's training cannot be dependant on market forces, since it is well established that good medical training requires trained, high quality teaching staff and appropriate facilities for clinical study. It is not possible to provide the required number of good, up to date, faculty and teaching staff for all existing medical schools. Moreover, the dismantling of several of the major teaching hospitals into smaller services has resulted in them being unsuitable for the training of medical students, further exacerbating the shortage of clinical affiliated hospitals available for bedside teaching. The privatization of hospitals makes them unwilling to participate in the teaching of medical students who have no economic value. The prospects for a satisfactory medical education in Georgia are thus grave. An example of the low quality is the fact that only half of all graduates successfully pass the post graduation state examinations (comprising multiple-choice questions and answers, which have not been updated for years and appear in full on the internet)

The same holds true for the residency programs. Since physicians can't practice, in Georgia, unless completing a residence program, the demand for these programs is much higher than the supply. Therefore, the exposure of residents to any real clinical situation is below its learning curve for almost every clinical procedure. Moreover, the residents pay for their training and since many of them has to raise money for tuition, usually by working in non medical jobs and fragmentize their training. Many of them end their training, in gynecology or pediatrics, with very limited clinical experience.

The shortage of good quality clinical teaching facilities and manpower also exists at the post-graduate, medical residency training level. Young specialists finishing residency programs have very limited practical experience especially when dealing complicated and rare situations. This is most relevant in

emergency, non-common situations where experience and skilled performance comes with past handling of similar situations, initially under supervision and subsequently independently. Such experience can only be achieved in large tertiary level maternity centers with a high volume of these procedures. In Georgia, where maternity clinics are numerous, poorly regulated and supervised, predominantly treating uncomplicated deliveries, with a volume too small to maintain an acceptable level of professional expertise, the accumulation of clinical experience and professional excellence is practically impossible.

The training process for neonatologists is not clearly defined and many physicians working in peripheral areas have had no training in neonatal medicine or resuscitation. A small number of young neonatologists have completed training programs abroad and will be able to have a significant role in the future development of neonatal training programs and neonatal services. Georgian neonatologists have access to recent medical literature and often participate in international medical conferences; however there appears to be significant discrepancy between their theoretical knowledge and practical clinical activities. Among neonatologists there exists an understanding of the need for improvement and modernization of the Georgian neonatal care system, as well as a desire to participate in this process.

In the past, a system of re-certification existed in Georgia. Accordingly, the physicians had to undergo class based training, called continuing medical education (CME), in order to maintain their certificate. Although this element alone is not enough to keep professional excellence, it is still an important measure for maintaining a basic level of knowledge. Only few countries have a re-licensing system at present, but many consider introducing it in the near future. Since medicine is a fast developing profession and new relevant clinical information accumulates rapidly, there must be a system which will


have the responsibility of delivering new knowledge to the physicians and assuring its assimilation. The reasons, leading to the abolishment of the CME/re-certification system in Georgia are not completely understood by us but we believe that this decision should be reconsidered

On the job training should also include also regular professional meetings at the hospital level as well as regional and national levels. To the best of our knowledge such meetings are rare and most of the gynecologists and neonatologists, especially in smaller maternity units and in rural areas, are not exposed to any such meetings.

The majority of physicians are located in Tbilisi and to a lesser extent in the other major cities. This leaves the rural areas and especially the remote ones, with very few physicians, many of whom under trained in modern techniques and lacking clinical experience. The shortage is even greater for gynecologists and neonatologists, to the extent of necessitating the use of primary care physicians and/or nurses as the main care-givers for pregnancy, delivery and newborn attendance. The shortage of gynecologists and pediatricians/neonatologists in remote rural areas will necessitate development of a creative plan to utilize those remaining as efficiently and professionally as possible. This will also affect the structure of the PN system since the availability of well trained and experienced staff is a major consideration in its planning. See chapter 7.5 for further discussion and possible solutions.

3.5.1.1. Physicians - Points of Strength

- An existing system for the regulation of physicians
- Good theoretical knowledge
- An understanding and acceptance of the need to improve the system


3.5.1.2. Physicians – Points of weakness

- An excessive number of medical schools/faculties
- A low level, un-regulated, quality of academic medical teaching.
- A shortage of teaching hospitals and clinical wards
- Inappropriate quality of graduate government examinations.
- A shortage of good quality residency programs with an appropriate volume of clinical cases.
- Inappropriate on the job training both as routine clinical updating of the staff in the medical facilities and organized programs of continuing medical education (CME).
- A shortage of gynecologists and neonatologists outside of the major cities.

3.5.2. Nurses

The nursing profession in Georgia is in a deep crisis which requires immediate intervention. Modern sophisticated, hi-tech and knowledge based medicine requires intelligent and well educated nurses who will be able to deal with the knowledge and technological activities imbedded in their daily activities. The number of nurses in Georgia is currently around 3.6/1,000 inhabitants, a sharp drop from the rate of 9.8/1,000 in 1990 (WHO Regional office, 2009) and probably the lowest in Europe (WHO Regional Office for Europe 2009).

Nurses in Georgia are trained in vocational schools. At present there are 13 nursing schools across the country. After independence, the number of nursing schools increased to 112 (12 public and 100 private) in 2004 but most were closed down soon afterwards. Entry to these programs can be from class 9 (age 15) when students would follow a three-year program (the initial year being a condensed version of secondary school years 10 and 11), or from class 11 (age 17) in which case the program is two years. The nursing faculties are: nursing, midwifery, orthopedic-dentistry, laboratory and pharmacy. In 2006, a nursing higher education school was established at the

Tbilisi State Medical University (T. Chanturidze et al, 2009) and the first class, of about 100 nurses and 20 midwives has graduated in 2010. About 30 of the graduates will stay at the university and are expected to join the faculty to become the academic nursing educators. Upon the success of the program the GoG is planning to upgrade most or all nursing programs into academic level ones.

The current social status of the nursing profession is very low, which appears to derive from the low level of training required to become a nurse in Georgia., The professional status of nurses as well as their salary is low and unappealing. Consequently, most students turn to nursing only when they fail to be accepted to other more attractive professions. In addition, post graduate specialized courses for nurses are unavailable.

In the western world the nursing profession had undergone a significant upgrade in its professional and personal status over the past 15 years. This is rooted in the academization of the profession and the professional expertise obtained by the higher education. This was followed by an increase in nurses' salary, prompted by higher training and an acute shortage. It would have been impossible for clinical medicine to make such significant advances, as it has done during the last decades, without the contribution made by the nursing profession. We believe that a parallel development of the profession in Georgia is a prerequisite to the expected evolution of medicine. This is even more pronounced in the perinatal and neonatal fields. Midwives have always had a high level of independence and in many countries are the main care-takers for normal pregnancies and deliveries. The same hold true for neonatal nurses, especially those stationed in tertiary and secondary units which have the characteristics of intensive care. This level of nursing cannot be achieved without acquiring a high level of theoretical knowledge and practical experience along with a profound mastery of the latest health technologies. The major change will start only with the academization of the profession and the establishment of higher second level of specialized courses. For the PN

field higher level courses in midwifery and neonatal intensive care are urgently required.

3.5.2.1. Nurses – points of strength

- Introduction of an academic program of nursing and midwifery

3.5.2.2. Nurses – points of weakness

- Low rate and an increasing shortage of nurses all over the country, especially in the rural areas.
- Low social and professional status
- Low level of training unsuited to deal with modern medical requirements
- Low nursing school entry standard
- Low quality training with very few clinical components.
- No higher specialized courses, including midwifery and intensive care
- No or very little on the job training.
- A shortage of higher level nursing educators and trainer

3.6. Quality

For the purpose of this MP we will deal with the basic elements of quality of medical services and healthcare. The major element is patient safety, since many of the mishaps occurring to patients during medical treatment are preventable and can be reduced, if not completely eliminated by creating a safer environment for patients. This includes, basic operating standards, proper competence of the staff, information transfer and reporting, team work, clinical guidelines and protocols and the use of evidence based medicine. Many of these aspects have already been discussed in this report, and are mentioned here in order to highlight a few of the elements which promote safe and quality medical activities.

There is no tradition of quality management and improvement in Georgia and good quality of care is not rewarded in most services. The current quality assurance system is not well developed and needs to be carefully reviewed and improved. The current standards are inadequate at all levels of health care and medical services. While the awareness of quality of care of the services among the providers and many of the clients has increased, the actual quality of the care being delivered has not changed and in several cases has deteriorated. There is no sector wide national program for the quality improvement.

The quality improvement activities which are presently performed are episodic and ad hoc and there is a clear lack of activity for continuous quality improvement. The present mechanisms and standards are unable to provide effective and appropriate quality assurance. MoLSHA is somewhat reluctant to improve standards, especially for infrastructure of the mostly privatized hospital market in the belief that these demands may scare existing and potential investors.

Much of the clinical activity in hospitals is financed by the government, through the various governmental programs. The contracts are handled by HeSPA. The program for the poor population is contracted through the PHIC. In both cases no quality indicators are required from the contracted suppliers and the clinical information provided by the supplier is minimal.

Physician's professional associations which might serve as quality promoters, currently function only very rarely in this capacity. The Gynecological associations are not unified and cannot reach a consensus on any subject. The Pediatric association has recently begun some activity but prefers that MoLSHA leads this field. The professional associations are concerned that


they lack the authority to suggest, let alone impose, new standards of medical activity.

3.6.1. Quality – Points of strength

- There is some awareness of the need for quality services by some service suppliers and clients
- The professional societies are beginning to take responsibility for quality issues.
- MoLSHA has endorsed some clinical guidelines in PN and also increased its control over the standards of activities of health facilities.

3.6.2. Quality – points of weakness

- There is no atmosphere of quality in the PN field
- Services are negotiated on price only and quality is usually not demanded or considered in the bidding process.
- Only few guidelines and protocols have been approved and endorsed by the professional societies and government.
- Conditions of health care delivery are not safe and do not appear likely to change in the near future
- Contracts between health facilities and insurance companies do not include any quality assurance requirement.
- Contracts between health facilities and Government agencies do not include any quality assurance requirement. No clinical reports are requested.

3.7. Health Related Information and Information Systems

Any clinical interaction between patients and health professionals creates information which is subsequently used in the determination of the best


therapeutic program for the patient. Clinical information about a patient should be available to all health professionals involved in the treatment and further supervision of the patient. Furthermore, aggregated clinical data from groups of patients and populations is useful for the analysis of trends in health indicators, pathologies and outcomes, and to update policies and resource allocation accordingly. Health related information is also required in order to assess the efficiency of the system as a whole and that of each service provider.

Currently much of the health related data are incomplete, unreliable or are missing, either because they remain in the files of the physician, nurse or within the medical facility or they were not appropriately recorded. There is no legal obligation to report any kind of data to the regulatory authorities within the ministry, even for the most fundamental issues such as perinatal and maternal mortality, let alone any data on maternal and infant morbidities. Consequently, all official data regarding pregnancy outcomes are incomplete and their accuracy is doubtful. For example, official data regarding pregnancy outcomes including maternal, perinatal, neonatal and infant deaths appear to be incomplete and their accuracy is doubtful. The officially reported is approximately 15 per 1000 live births but estimates as high as 25-40 per 1000 births have been suggested.

Policy decisions based on such information may fail to achieve the expected results, and the corrective measures employed may proceed in the wrong direction.

Georgia also lacks a national registry regarding serious pregnancy or neonatal related pathologies such as Down's syndrome and other genetic abnormalities, congenital malformations, congenital hypothyroidism, diabetes in pregnancy etc. Such registries are of prime importance in determining health related policies and resource allocation, in the prioritization of costly

medical interventions and in the assessment of intervention programs. It is well understood that availability of in formation to the caregivers is a fundamental issue in their ability to supply quality clinical care

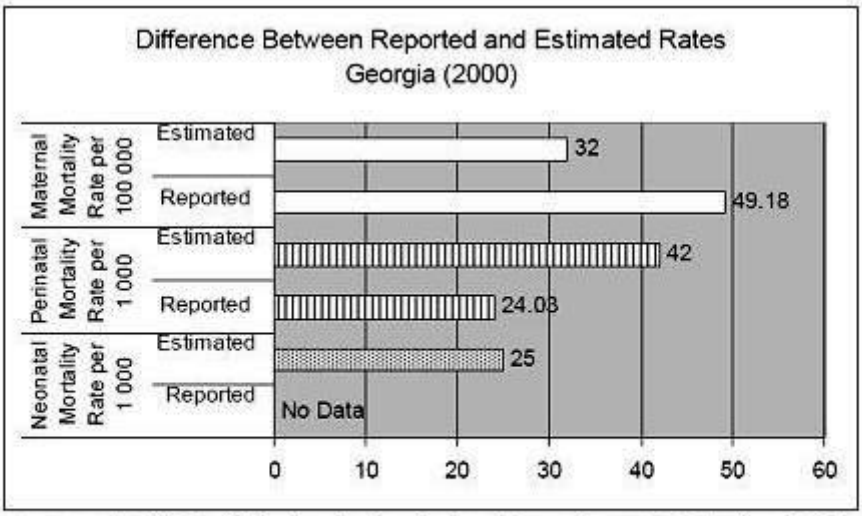
On the patient level, we found out that information collected during prenatal visits is not transferred to other medical facilities, including prenatal ambulatory facilities, inpatient high risk facilities, or delivery rooms. In modern medicine where preventive activities and early detection of medical pathologies are regarded as the best measure for improving maternal and fetal/newborn outcomes, it is unacceptable that medical information is not transferred between health care providers. Pathologies such as preeclampsia / eclampsia, gestational diabetes, anemia, hypothyroidism, placental insufficiency and many others can be diagnosed, and treated long before they deteriorate into severe and life threatening conditions. In most of these conditions, close observation, follow-up and rigorous treatment may be required throughout the remainder of the pregnancy, making information transfer among providers an absolute necessity. For example, the most common cause of maternal mortality in Georgia is eclampsia, a severe and rare complication of the prevalent and treatable preeclampsia. This complication should rarely occur if preeclampsia is diagnosed and treated at an early stage.

It should be emphasized that making health related information accessible can be achieved primarily by changing the health care providers' behavior and generally does not require sophisticated or expensive measures. Therefore it can be one of the first issues to be addressed in the implementation period of the MP. Conversely, creating a computerized health related information system is much more complicated and resource consuming and hence its implementation might be considered later on or be implemented gradually

The internet, which leads the information revolution, is not being utilized in Georgia to promote knowledge, communication, training, distribution of information and many other possible functions. Since internet access is relatively inexpensive, Georgia might join the leading group of countries to use it for many health related functions. Moreover, this tool may enhance interaction not only within the health professionals but also facilitate interaction with the many sub-populations otherwise unreachable.

Georgia is just at the very beginning of the information technology era, which has already revolutionized information gathering, preservation, analysis and utilization. Several countries have a national medical record system, in others hospital computerized medical records can be accessed, including all clinical data physicians orders, patient follow-up lab results, imaging results, drugs used and drug interaction warnings, surgical information and other information which enable the care givers to practice more efficiently and safely. All these IT's were introduced and developed within the last 15 years and with time have become more mature and less expensive. A satisfactory personal computer costs around $250 making it affordable for health care facilities even in developing countries. Georgia is about to leap into the IT revolution and to our knowledge the GoG is planning to invest the resources needed for making the infrastructure for the technology available throughout the country.

Figure 1: Georgia: Differences between reported and estimated maternal mortality ratio, neonatal mortality rate and perinatal mortality rate (2000)

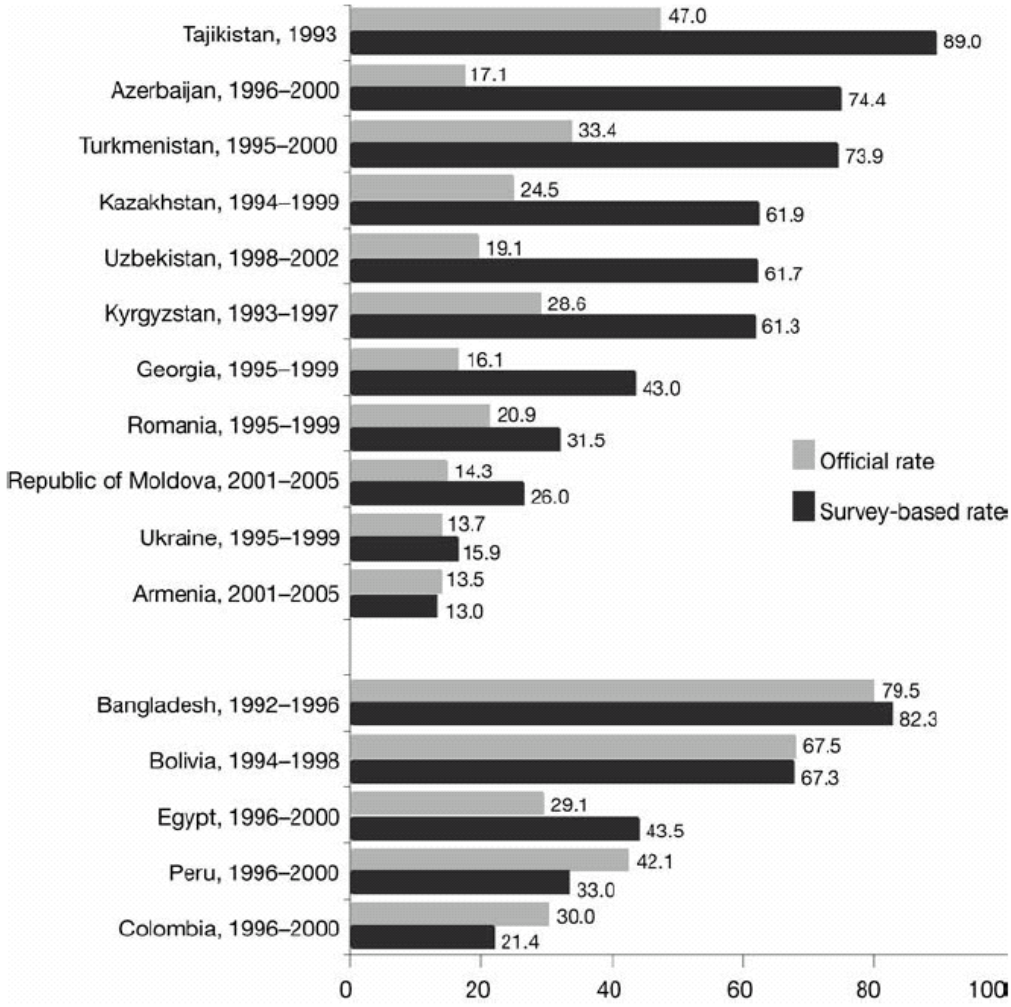


Data source: European Health for All database [online database]. Copenhagen, WHO Regional Office for Europe, 2006 (http://data.euro.who.int/hfadb/ accessed July 2006) and *Neonatal and Perinatal Mortality: Country, Regional and Global Estimates*. Geneva, World Health Organization, 2006.

3.7.1. Information - Points of Strength

- There is a dedicated department in MoLSHA, the NCDCPH which has the task of collecting, analyzing and publishing health related statistics. The department has a dedicated knowledgeable staff and its reports are published annually.
- The government is planning a national computerized information system
- The government had issued all citizens with I.D. Any newborn receive an ID number before discharge from neonatal unit

Figure 2: Infant mortality in selected CEE-CIS and comparator countries (per 1000 live births)



3.7.2. Information - Points of Weakness

- No MDS for PN patient clinical information
- No sharing of clinical information among care givers
- No culture of documenting and reporting clinical data to the authorities, especially in cases of mishaps.
- Shortage of basic computer equipment in health facilities.
- Almost no IT in health care facilities including tertiary level ones.
- Most professionals still lack basic computer skills

3.8. Special Populations

A subpopulation is defined as special if under the current health care conditions its measured health outcomes, such as life expectancy, child mortality, and maternal mortality are significantly worse than the rest of the population. For our sake the relevant outcome indicators are maternal mortality ratio and perinatal mortality rate. In general, globally , inferior health outcomes result from multiple cause including: lower socio-economic status, lower education level, being ethnic minorities, worse access to public services including health facilities and professionals, due to remoteness or an inferior transportation infra-structure etc. Therefore, attempting to close the health outcome gap only by improving health services is unrealistic. On the other hand, increasing access and quality of the health services to or above the level of the rest of the population may compensate for other non health care related topics that compromise the subpopulation's health and thus reduce the gap with the rest of the population.

3.8.1. Ethnic minorities.

We identified 2 subpopulations for whom the above description is relevant, the Azeri and the Armenian ethnic minorities.

Armenian minority: 250,000 people, 5.7% of the total population. 90,000 inhibit the Akhalkalaki and Ninotsminda municipalities located in Samtskhe-Javakheti regions in South Georgia, where they comprise more than 90% of the population.

Azeri minority: 285,000 6.1% of the total population. 170,000 inhibit the Dmanisi, Bolnisi and Marneuli municipalities located in Kvemo Karti regions in south-east Georgia where they comprise about 2/3 of the population.

Data derived from 2001 census and extracted from the "Diversity GE website" (http://www.diversity.ge/eng/map.php)

The Government and the President of Georgia created the positive legal environment for minorities by securing their rights and cultural heritage (Georgian Presidential decree №639 (2005). On the other hand Georgian was set to be the only official language and the only one to be used in public offices. Many of the Azeri and Armenian population living in the heavily minority populated regions in South and South-East Georgia have not mastered Georgian since they are allowed to teach their native language as the first one at school and hence are in an inferior position when they apply to an academic or vocation school or for a job, especially in Governmental and public offices. This creates an acute shortage of Azeri and Armenian personnel which further limits access. This also leads to a lower socio-economic status and limits the probability for any health promotion program. These fundamental issues need to be addressed prior to the establishment of any specific expensive health care programs.

Perinatal service utilization in Kvemo Karti, is the lowest in Georgia. Only 39.6% complete all four antenatal visits required and paid for by the government, compared to a 71.8% national average and 73% in Tbilisi. 42% are tested for Hepatitis B during pregnancy as compared to the Georgian average of 73.3%.. (Ministry of Labor, Health and Social Affairs 2009).

3.8.1.1. Points of Strength

- Legal framework suitable for securing minority rights
- A positive Government attitude towards minorities
- A topic which may attract financial resources from International NGO's and private donations.

3.8.1.2. Points of Weakness

- Low level of socio-economic status
- Concentration in remote monoculture regions
- Language discrepancies limit access to health care personnel and facilities

- A pronounced shortage of Armenian and Azeri language speaking health care personnel.

3.8.2. Inhabitants of remote areas.

The other subpopulation which requires special attention are those living in small, remote, mountainous villages where transportation is difficult throughout the year and almost impossible during winter months to the extent , occasionally, of complete isolation.
Many of these villages are partially or completely deserted by their inhabitants during winter.

The total number of deliveries, in these regions is very small. For example, in the regions Racha-Lechkhumi and Kvemo-Svaneti combined there were 106 deliveries during 2008. The land area of the regions is 5,000 Km^2 and the total population is 48,000 inhabiting 3 cities, 3 towns and 251 villages. The largest part of Racha-Lechkhumi is a mountainous area and the economy heavily relies on agriculture. The infrastructure is poor consisting mainly of narrow and winding roads, which connect the settlements with each other. A helicopter is often the only means of transportation able to reach the towns of Ambrolauri and Oni in winter.

3.8.2.1. Points of strength

- ?The use of helicopter when needed of medical transport.

3.8.2.2. Points of weakness

- Low population density
- Difficult transportation, especially at wintertime
- Undeveloped health infrastructure
- Shortage of health personnel

4. Learning from others – International experience and models of service delivery

Developed countries have adopted several organizational strategies in attempting to optimize their health care systems, in order to achieve the best care possible with the available resources. Each country has a unique way of organizing and providing health services, based on its political philosophy, history of previous systems and policies, availability of professionals and economic constraints. However, general trends can be identified which may be used in our effort to improve PN care in Georgia. At the outset it must be noted that most countries do not rely on free market forces to direct the organization of health care services. This is the result of the known market failure in the field of health care, as well as the understanding that a comprehensive, preplanned system will achieve better health outcomes than a fragmented one where services are provided only if they are profitable and where the system is composed of many small services each owned by an individual proprietor. This is of particular concern in the field of perinatal health care which requires an equitable, comprehensive and integrated program of care for all mothers and infants, in order to achieve acceptable outcomes. This chapter considers an American and some European models of perinatal care. All of them discuss the concept of Regionalization of perinatal and neonatal care. A similar analysis was preformed in Georgia by the Perinatal System Strengthening Task Force (USAID, 2009). We chose, in this chapter, to broad the discussion on this subject and describe in depth the considerations made by other countries since we believe that some concepts, but not all, of regionalization can be adopted and assimilated into the Georgian system. See also chapter 4.2.

4.1. The Regionalization of Perinatal-Neonatal Care

"The quality of perinatal care expressed as maternal, perinatal, neonatal and infant mortality rates, is influenced not only by the availability of medical technology, and the improved educational, social and economic status of the population, but also by perinatal care organization".*(Ref: Neto Acta Pædiatrica, 2006; 95: 1349-1352)*

"Most studies that link neonatal outcomes with levels of perinatal care indicate that morbidity and mortality for very low birth weight (VLBW) infants are improved when delivery occurs in a subspecialty facility rather than a basic or specialty facility even after adjustments for severity of illness. Regionalized systems of perinatal care are recommended to ensure that each newborn infant is delivered and cared for in a facility appropriate for his or her health care needs and to facilitate the achievement of optimal outcomes. Health planners and care givers seek continuously to optimize the organization of services for women and newborns, to guarantee their medical safety, refer them according to their level of risk and promote access to these services". *(Ref: Levels of Neonatal Care ,AAP, Committee on Fetus and Newborn, Pediatrics 2004;114;1341-1347)*

"Numerous studies show the benefits of regionalizing care for very preterm births and concentrating a high proportion of these deliveries in level-III maternity units .In Europe, regionalization of perinatal care was implemented progressively, beginning in the mid-1970s in several Scandinavian countries but not until the mid-1990s in many other countries, including Denmark, France and Poland. While there is an enormous variety in the organization of care for very preterm babies in Europe, because of the combination of the diversity of healthcare systems between countries and the staggered implementation of regionalization policies, all health systems share the same challenge to ensure that women who will deliver very preterm—approximately 1% of all pregnant women—do so in an appropriate maternity unit. Achieving this goal may depend on the general organization of obstetric care". *(Ref*

Blondel B, et al the Mosaic Research Group. Organization of obstetric services for very preterm births in Europe: results from the MOSAIC project. BJOG 2009; 116:1364–1372.)

4.1.1. U.S.A. Regionalized Neonatal Care

(AAP Committee on Fetus and Newborn, 2004, Johnson K.A., Little G.A. 1999).

"In 1993, *Toward Improving the Outcome of Pregnancy: The 90s and Beyond* (TIOP II) reaffirmed the importance of an integrated system of regionalized care. The designations were changed from levels I, II, and III to basic, specialty, and subspecialty, respectively, and the criteria were expanded. Within the regionalized system, personnel and technology at each level should be appropriate for patient needs to facilitate optimal outcomes. Level I, or basic neonatal care, is the minimum requirement for any facility that provides inpatient maternity care. The institution must have the personnel and equipment to perform neonatal resuscitation, evaluate healthy newborn infants and provide postnatal care, and stabilize ill newborn infants until transfer to a facility that provides intensive care. Level II, or specialty care nurseries, in addition to providing basic care, can provide care to infants who are moderately ill with problems that are expected to resolve rapidly. NICU. Level III, or subspecialty NICUs, can care for newborn infants with extreme prematurity or who are critically ill or require surgical intervention."

Definitions of Hospital-Based Newborn Services -

Level I neonatal care (basic)

Well-newborn nursery: has the capability to:

Provide neonatal resuscitation at every delivery

Evaluate and provide postnatal care to healthy newborn infants

Stabilize and provide care for infants born at 35 to 37 weeks' gestation who remain physiologically stable

Stabilize newborn infants who are ill and those born at ≤35 weeks' gestation until transfer to a facility that can provide the appropriate level of neonatal care.

Level II neonatal care (specialty)

Special care nursery: level II units are subdivided into 2 categories on the basis of their ability to provide assisted ventilation including continuous positive airway pressure.

Level II A: has the capability to resuscitate and stabilize preterm and/or ill infants before transfer to a facility at which newborn intensive care is provided

Provide care for infants born at >32 weeks' gestation and weighing ≥1500 g (1) who have physiologic immaturity or (2) who are moderately ill with problems that are anticipated to resolve rapidly and are not anticipated to need subspecialty services on an urgent basis

Level II B has the capabilities of a level II A nursery and the additional capability to provide mechanical ventilation for brief durations (≤24 hours) or continuous positive airway pressure

Level III (subspecialty) NICU:

Level III NICUs are subdivided into 3 categories

Level III A: has the capabilities to provide comprehensive care for infants born at >28 weeks' gestation and weighing >1000 g

Provide sustained life support limited to conventional mechanical ventilation

Perform minor surgical procedures

Level III B NICU: has the capabilities to provide comprehensive care for extremely low birth weight infants (≤1000 g and ≤28 weeks' gestation)

Advanced respiratory support such as high-frequency ventilation and inhaled nitric oxide

Prompt and on-site access to a full range of pediatric medical sub specialists

Advanced imaging, with interpretation on an urgent basis, including computed tomography, magnetic resonance imaging, and echocardiography

Pediatric surgical specialists and pediatric anesthesiologists on site or at a closely related institution to perform major surgery

Level III C NICU: has the capabilities of a level III B NICU and also is located within an institution that has the capability to provide ECMO and surgical repair of complex congenital cardiac malformations that require cardiopulmonary bypass

Recommendations (USA):

(AAP Committee on Fetus and Newborn 2004)

1. Regionalized systems of perinatal care are recommended to ensure that each newborn infant is delivered and cared for in a facility appropriate for his or her health care needs and to facilitate the achievement of optimal outcomes.

2. The functional capabilities of facilities that provide inpatient care for newborn infants should be classified uniformly, as follows:

Level I (basic): a hospital nursery organized with the personnel and equipment to perform neonatal resuscitation, evaluate and provide postnatal care of healthy newborn infants, stabilize and provide care for infants born at 35 to 37 weeks' gestation who remain physiologically stable, and stabilize newborn infants born at less than 35 weeks' gestational age or ill until transfer to a facility that can provide the appropriate level of neonatal care.

Level II (specialty): a hospital special care nursery organized with the personnel and equipment to provide care to infants born at more than 32 weeks' gestation and weighing more than 1500 g who have physiologic immaturity who are moderately ill with problems that are expected to resolve rapidly and are not anticipated to need subspecialty services on an urgent basis;

Level III (subspecialty): a hospital NICU organized with personnel and equipment to provide continuous life support and comprehensive care for extremely high-risk newborn infants and those with complex and critical illness.

3. Uniform national standards such as requirements for equipment, personnel, facilities, ancillary services, and training, and the organization of services (including transport) should be developed for the capabilities of each level of care.

4. Population-based data on patient outcomes, including mortality, specific morbidities, and long-term outcomes, should be obtained to provide level-specific standards for volume of patients requiring various categories of specialized care

4.1.2. **The Portuguese Model** (Neto, 2006)

"In 1989, the committee recommended major structural changes, resulting in the present Perinatal Healthcare System. The reform included

1) Proposed closure of maternity units with less than 1500 deliveries per year;

2) Classification of hospitals into levels I, II and III;

3) Functional coordinating units between hospitals and local health centers;

4) Special training in neonatology*a postgraduate course of 6 mo (later 1 y) starting in 1990;

5) Establishment of a network of perinatal referral hospitals in the north, centre and south of Portugal;

6) Provision of neonatal intensive and intermediate care units for level III and level II hospitals, respectively;

7) Advice on medical and nursing requirements to ensure unit feasibility;

8) Advice on in-uterus transport but also provision of transport for those babies born outside the centre, thus creating nationwide Neonatal Transport System.

As a result of this reorganization, several maternity units were closed, deliveries occurring in health centers and level I hospitals ceased, and since then levels of perinatal medical care have become more apparent (Figure 1)"

Figure 3: Model of Health care organization in Portugal

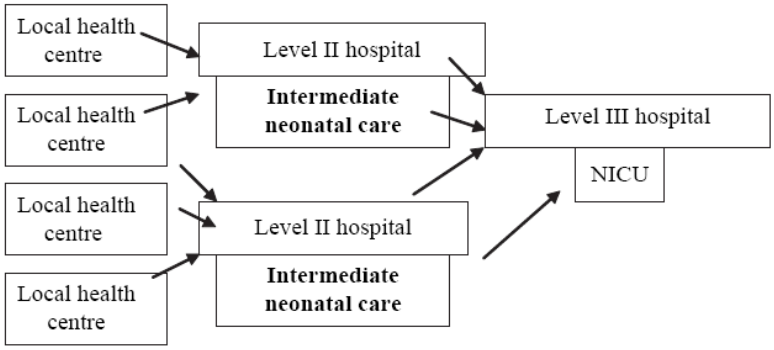


Figure 1. Model of healthcare organization in Portugal. Health centres and level I hospitals have no deliveries. Level II hospitals deliver normal and low-risk newborns, have intermediate care units, and provide short-course ventilation until arrival of neonatal transport. Level III hospitals are referral centres providing long-course ventilation, repair of surgical conditions, care for VLBW newborns, cardiac anomalies, etc. In-uterus transport is the goal but some unexpected deliveries of preterm or malformed newborns benefit from a National Neonatal Transport system.

This report also notes: “The closure of small maternity units those without enough deliveries and experience to maintain high levels of obstetric care was probably the most important but also the most difficult and controversial measure to implement and maintain, as it faced opposition from local political powers and inhabitants. Also, in spite of the great increase in intrauterine transport, we should emphasize that the Portuguese Neonatal Transport System, with its own neonatal team recruited amongst NICU staff, is part of the success, stabilizing the newborn before transport and identifying the most suitable destination for mother and child.”

4.1.3. Europe- Preterm care

Organization of obstetric services for very preterm births in Europe: results from the MOSAIC project (Blondel B, et al 2009)

This study evaluated the impact of the organization of obstetric services on the regionalization of care for very preterm births in ten European regions The rate of specialized maternity units per 10 000 total births, the proportion of total births in specialized units and the proportion of very preterm births by referral status in specialized units were compared.

Results

The supply of total maternity units varied from 5.5 per 10 000 births or less in the study regions in Denmark, France, Portugal and UK, to more than 10 in those in Belgium, Germany, Italy and Poland. (Table 2). **The mean supply of level III units was 1 per 10 000 births**. Provision of units was <1 per 10 000 births in the Danish, French, Dutch and Polish regions, whereas it was much higher in the regions from Germany, Italy and Portugal. The variation in supply was less marked for maternity units associated with larger neonatal intensive care units, but there were still differences between regions with rates over 1 per 10 000 in Hesse (Germany) and UK North versus <0.5 per 10 000 in the Italian and Polish regions.

Table 2: Rate of maternity units per 10,000 total births in each region for all maternity units and specialized maternity unit in each participating regions

Table 2. Rate of maternity units per 10 000 total births in each region for all maternity units and specialised maternity units in each participating region

Country	BE	DK	FR	GE	IT	NL	PL	PO	UK	UK	Total
Region*	Fl	Ea	IF	He	La	C-E	W-L	No	Tr	No	
All units (*N*)	(72)	(14)	(80)	(75)	(57)	(24)	(53)	(18)	(18)	(15)	(426)
	12.3	4.0	5.5	14.3	11.6	6.0	12.4	5.2	3.2	5.1	7.8
Level 3 units** (*N*)	(8)	(2)	(11)	(10)	(11)	(2)	(1)	(8)	–	(4)	(57)
	1.3	0.6	0.8	1.9	2.2	0.5	0.2	2.3	–	1.4	1.0
Units associated with a large neonatal unit*** (*N*)	(6)	(2)	(10)	(6)	(2)	(2)	(1)	(2)	(5)	(4)	(40)
	1.0	0.6	0.7	1.1	0.4	0.5	0.2	0.6	0.9	1.4	0.7

*See Table 1.
**In the Trent region, no regional policy based on the level of care at the time of the survey in 2003.
***Neonatal unit on the same site with at least 50 annual admissions of newborns under 32 weeks.

The percentage of infants 24–31 weeks of gestation delivered in level III maternity units ranged from 63–64% in the Danish and Polish regions to over 80% in the regions from Belgium, Germany, Italy and Portugal (Table 3). This proportion did not vary greatly by gestational age group in Flanders, Hesse,

Lazio or the Polish and Portuguese regions. In Denmark, the percentage born in level III decreased with increasing gestation. In France and the Netherlands, the rates of births in level III were highest between 28 and 29 weeks and lower both before and after.

Table 3: Proportion of very preterm births which took place in specialized maternity units, by gestational age, in each participating region

Table 3. Proportion of very preterm births which took place in specialised maternity units, by gestational age, in each participating region

Country	BE	DK	FR	GE	IT	NL	PL	PO	UK	UK	Total
Region*	Fl	Ea	IF	He	La	C-E	W-L	No	Tr	No	
Number of births**											
Total (24–31 weeks)	574	326	901	601	451	379	398	289	766	406	5091
24–27 weeks	181	89	262	185	137	79	140	90	221	131	1515
28–29 weeks	153	91	258	164	102	102	90	83	210	114	1367
30–31 weeks	240	146	381	252	212	198	168	116	335	161	2209
% in level 3 unit***											
Total (24–31 weeks)	82	64	76	85	87	74	63	93	–	73	78
24–27 weeks	81	83	74	87	88	71	63	94	–	82	80
28–29 weeks	83	69	83	87	87	88	69	96	–	79	83
30–31 weeks	82	50	72	81	87	68	61	89	–	61	73
% in unit associated with a large neonatal unit****											
Total (24–31 weeks)	72	64	76	60	37	75	63	46	58	73	64
24–27 weeks	69	83	75	63	37	73	63	54	60	82	66
28–29 weeks	76	69	84	62	41	88	69	43	60	79	69
30–31 weeks	73	50	73	56	35	69	61	43	55	61	59

This study found that the availability of specialized hospitals and intensive care resources for very preterm newborns varies by geographic areas in and between countries. There is a strong relation between the density of level III maternity units and the percentage of births in these maternity units. Availability of nearby services can facilitate regionalization; accordingly, the percentage of very preterm births in level III maternity units is higher for mothers living in a county with a hospital providing subspecialty perinatal care.

4.1.4. **The Czech Republic** (Shnimek, 2007)

The Czech republic has succeeded in achieving an excellent perinatal outcome of Infant mortality 3,3 per 1000 live born children and a frequency of

LBW - 7.2%. This is mostly attributed to the reorganization of the perinatal health care in according to the concept of regionalization.

The main causes, of low infant mortality, related to the organization of the system are as follows:

a) High quality of prenatal and neonatal care.
b) Preventive care for pregnant women – paid from public health insurance

1. High coverage (98.6% receiving prenatal care).
2. Early registration (81.8% in 1st trimester)
3. More than 6 antenatal visits
4. Ultrasound screening

c) Hospital deliveries (99.8% of all births)
d) 12 perinatal centers, equipped with top-quality diagnostic and therapeutic technology and highly educated staff. These workplaces are closely connected with specialized intermediary centers of neonatal care for premature newborns or newborns with low birth weight.

Provision of Medical Care in the Czech Republic

Medical care in the CR is mostly paid by public medical insurance, which is obligatory by law.

During their stay in the maternity hospital, all children undergo screening tests for phenylketonuria, hypothyroidism, cataracts and congenital adrenal hyperplasia.

Preventive care for children begins in the prenatal and perinatal period with cooperation between obstetricians, geneticists and pediatricians.

Contemporary pediatrics has a well-introduced system of preventive examinations and an immunization program based on a vaccination calendar paid from public medical insurance. The law enables /stipulates 11 preventive examinations up to the age of 18 months.

4.2. The Stratified PN services model suitable for Georgia

The regional system which has been adopted by many countries has many advantages but as a concept is far from being optimal for Georgia. This is predominantly for two main reasons: (a) It is suitable for larger countries where the geographical conditions define clearly the regions while in Georgia approximately half of the deliveries occur in Tbilisi and many of the other regions are situated in close proximity to one another so that there is no need to strictly define the regional relationships of the individual components of the various strata of care and (b) the deeply free market oriented meta policy of the Georgian government which is projected to the health system via privatization and self sustainability of health facilities in a highly competitive market.

On the other hand there is no adequate alternative to a pre-planned stratified organization of the inpatient component of the health system since it is doubtful whether tertiary or even secondary level maternities and neonatal units will be created through a natural evolutionary economical process over a relatively short period.

Another important point is the fact that in small countries, the primary level of maternities is unnecessary since it supplies, almost by definition, an inferior quality care while women can reach a better quality II level maternity with a small extra effort. Also, is a country like Georgia the number of III levels facilities should be kept to a minimum (6-7) Neonatal units with NICU and 2-3 Obstetrical high risk wards. Therefore, the backbone of the system is level II Maternities and neonatal units. This model is, in many ways, close to the Portuguese one.

The functioning of the system requires organized and contractual relationships coordinating the care between caregivers, maternities and neonatal units of different therapeutic capabilities. This will enable the creation of a stratified

system which will provide the best possible clinical care and outcome with the most effective utilization of the limited resources available. The efficiency of the system will increase when each of the maternities is obligated to contract with a higher level facility/ies, but will be able to do so through competitive mechanisms such as tenders or other kinds of negotiations. The stratified system suggested here is designed first and foremost to guarantee continuity of care at the level most appropriate for the patient's requirement and is best adapted to the organizational structure of the Georgian health system as defined by government policy.

In summary, we suggest a stratified system of maternity and neonatal facilities which are interrelated to one another via negotiated contracts thus providing all levels of inpatient maternity and neonatal care. We believe that this model is optimal for the current and future Georgian health system. We term the model which will include also ANC as the Stratified Perinatal and Neonatal model. The model will be thoroughly presented in chapter 7.3

5. Assumptions

Assumption regarding demographics, statistics and data collection:

- The number of live births will increase to about 70,000 per year
- Improved reporting and registering of births will result in an increased rate and number of low birth weight and very low birth weight (VLBW) infants (Similar to world data):
    - Low birth weight -7% (present 5.5%)
    - Very low birth weight (<1500g) -1% (present 0.7%)
    - Extremely low birth weight (<1000g)-0.3%% (present 0.1%)
    - The number of infants requiring special care will increase from 8.6% to about 10%


- Expected reduction in the number of infants with perinatal asphyxia and neonatal sepsis
- Improving survival and length of hospitalization of premature infants will result in an increased requirement for neonatal care facilities
- Improved reporting and registering of births and infant deaths will initially result in an increased NMR and IMR

Assumptions related to general and health policies

- Democratic governmental policies will prevail for the foreseeable future
- Political conflicts will be resolved through diplomatic channels rather than military ones
- The government's policy of affordable health coverage for all Georgians will continue
- Health Insurance will be supplied mostly by the PHIC's which wll also be in charge of operating many health care facilities

Assumption related to economics and financing

- The GDP of Georgia is expected to grow by 8%/year in the next 5 years (Economy Watch 2011). We assume a similar growth rat for the entire Implementation Plan period.
- The average health expenditure will stay at a range of 8.0-8.5% of the GDP
- The government will continue to provide full financial coverage for mother and child care, including antenatal care, labor and delivery and neonatal care.
- The share of the PHIC in health care financing will continue to grow

Assumptions related to the organization of the health care system in Georgia

- The GoG will deepen its involvement in the regulation of the health care field, including the privately owned health care facilities
- The GoG will take part in planning and executing the stratified model of perinatal and neonatal services system of PN
- The PHIC will in time, become the major or one of the major players in several aspects of the health care market including:
    - Financing
    - Ownership of health care facilities
    - Employer of professional staff
    - Enforcing clinical quality standards

Assumption related to information and information system

- The GoG will invest in building an information highway infrastructure
- Internet utilization will grow at a rapid rate among the health care professionals, government officials and the general public.

6. Master plan and Implementation plan considerations

6.1. Financial Considerations

It is clear that the major limitation of any MP is in financing the proposed program, and the present plan is no different. We also understand that the resources available in Georgia for health care, now and in the near future, cannot match the large demand for renovation of the infrastructure which had been neglected since independence almost 20 years ago. As a policy, the public health expenditure is low and is expected to stay so in the foreseeable future. Therefore, most investments should come from the private sector through investors, the PHIC or philanthropy. We also assume that in the future, if the private market fails to support enough investment in health, in the presence of significant economic growth the government will have to

reconsider its role as a financier of the healthcare infrastructure. In relation to financing service delivery, the basic PN field is already financed almost entirely by the government, except for some long term complications that are not covered by the state and have to be paid out of pocket.
Considering these limitations the MP will calculate estimates of costs. In some situations where adequate data are not available, such costs will be estimated qualitatively.

6.2. System Organization Considerations

At present the health system in Georgia lacks a comprehensive overlook, since the policy of widespread privatization combined with a low level of regulation has resulted in a fragmented system composed mainly of pockets of economically sound services. Despite of the fact that these services may be of good quality, the lack of integration of care and the absence of a number of essential but not profitable services might result in a suboptimal and questionably sustainable health care system.

Reviewing the key players in the system, we believe that the new player in the market, the private health insurance companies (PHIC's), may emerge in the near future as the major power in the market able to dictate many aspects of its behavior. Moreover, in the last tender for the program for the most vulnerable families, the PHIC's competed in a way that each bid was for a unique territory with no coverage of any single territory by more than one PHIC. The winning PHIC in each area is expected to provide quality services to every participant in the program, living in the area. They were also required to build small hospitals each in each territory. In this capacity the PHIC's turn out to be the major financial power and largest health care supplier in the area, either by owning health care facilities, by operating or by purchasing services. The PHIC's are not only expected to provide quality care for their insured population, but also will have an incentive to provide quality care to

uninsured individuals seeking services in facilities owned by or affiliated to them, in order to recruit new members for their insurance plans. The main incentive will be the desire to increase their insured clientele by promises of good care. It appears that good performance by the PHIC's may motivate the government to transfer the execution of additional government programs to them. This, in itself may serve as a strong incentive toward their taking responsibility for the provision of quality care. The PHIC'S are beginning to realize that, in fact, they are evolving into a form of HMO's with direct responsibility for the provision of healthcare.

The stratified model of the perinatal and neonatal facilities organization is best suits the Georgian policy of privatization and competition combined with well defined standards of the various levels maternities and neonatal units. It must be remembered that such a system is flexible and ever changing and needs constant stewardship. At the present only the government can supply such a stewardship while in the future this role may be transferred, at least in the operational level, to the PHIC's or similar organizations.

6.3. Methodological considerations

The data presented in this document is based on official Georgian sources, mainly from the MoLSHA statistical bureau, non governmental written publications, and actual data collected by the project team via questionnaires and direct observations.

National statistics of the health care are published yearly by the NCDCPH. There is some controversy related to the quality and reliability of the data presented since, although reporting of health related information is mandatory, the policy is not universally enforced. Similar data available from other official sources differ significantly from that of MoLSHA.

We take into account that as a young and vibrant democracy Georgia is changing rapidly with many new reforms which despite being based on a few

fundamental concepts, take different approaches and are constantly adapted to the ever changing geopolitical, economical and political conditions. In this context, any attempt to prepare a 15 year long Master Plan appears to be almost impossible. Therefore, a viable MP needs to be analyzed, adapted and periodically revised to fit the new conditions within and outside of the Georgian health care system. This should be done by an entity to whom this responsibility will be delegated by MoLSHA and the other partners of the MOU.

We chose as "key areas of work" several main issues which must be tackled in order to achieve the goals defined previously. They are listed in a conceptually logical order as follows: (1) policy; (2) Financing; (3) Organization of services; (4) Infrastructure; (5) Human resources, physicians and nurses; (6) Quality; (7) Information and information systems; and (8) Special populations. Each key area is further divided into sub chapters which are the strategies suggested to be taken in the key area. For each of these strategies we define: (a) milestones and a final goal. The final goal for each strategy will be the expected outcome for the strategy, while the milestones will be defined either as a linear progression toward the final outcome if the case is self explanatory or as a specific interim target; (b) priority of the milestone in terms of year of start and duration of work on the subject; (c) whenever possible, an estimate of costs of the issue. If the implementation of an issue can be achieved with no addition of manpower or direct materials the cost will be defined as zero, although there might be some expenses in order to enforce behavioral changes or make employees function in an improved manner. Some of the key areas of work are wide and relate to broader aspects of the health care system and not only for Perinatology and Neonatology. For example, the quality of medical education or the problematic shortage of nurses. They are discussed in this report due to their fundamental effect on the PN field.


Figure 4: Schematics of the structure of key areas, strategies, milestones, and goals

- Key area a
- Strategy aa Milestones aaa, aab*… Final goal (expected outcome)
  - Strategy ab Final goal
- Strategy ac Milestone aca Final Goal
- Key area b

* # of milestones depends on the duration of implementation of the strategy (one milestone every 2-3 years)

When, in our opinion, there is a means of improving PN care without a major reform of the key area, we will set final goals and milestones only with the partial solution relevant to PN. The broader aspect of the key area will be discussed and analyzed only in the "current situation" chapter.
When a key issue has broad aspects but there is no possibility to improve PN care without a major reform of the key issue, it will be considered in full in the MP including the IP and final goals and milestones will be suggested.

Moreover, the Master Plan Overseeing and Control Task Force (MOCTaF) will have the responsibility to promote its improvement even though is the issue is beyond the formal scope of the MP. An example of such a key issue is the crisis of the nursing profession. Good quality nurses are of prime importance in supplying good health care in general and in PN in particular. The reform of nursing is a multidimensional project and the MP and IP is obliged to participate.

6.4. Accountability Considerations

The major powers participating in the health market must also share various degrees of accountability and responsibility for managing the PN system, each in its own capacity

6.4.1. The GoG

In any democratic society, the government, via the appropriate ministries is the final decision maker in term of determining the policy and carrying it out by setting and enforcing regulations and supplying the resources, directly through public resources or indirectly by enabling investments of the private sector. The Government also has the responsibility for large scale planning of the civil systems irregardless of the type of ownership of the service providers. While the GoG has a very clear health policy, it has not yet set a macro plan of the structure of the health system as a comprehensive, integrated system, rather than an accumulation of privately owned or managed facilities each acting as a unique entity with little or no view of their role as part of the whole system. This MP, requested by the GoG, is a step in the so needed transition to a broader view of a comprehensive Perinatal and Neonatal healthcare system.

6.4.2. The PHIC's

The PHIC had their initial step in the health market approximately 3 years ago and is rapidly emerging to be one of the main forces in the health care market. Currently they handle the delivery of health care services for about 25% of the population via their execution of the comprehensive health care program for the poor, on behalf of the government. The last governmental tender which was tendered a few months ago, requires each PHIC to be responsible for the population entitled to the program within a defined area of the country. Thus, competition was reduced to minimum but left much incentive for the PHIC to improve their quality of services. The PHIC's, which have envisaged themselves just as non political professional organizations are, evolving into a form of HMO's with the formal responsibility for the health of their insured population. Furthermore, since the PHIC's will control most of the health

facilities in the country, through ownership, management, or contracts, they will have a major impact on the services even for the non-insured populations. The PHIC's are accountable to MoLSHA for the governmental programs they handle and to the governmental agency in charge of insurance plus MoLSHA for the other insured populations.

6.4.3. The Professional Associations

Throughout the world, the associations of health professionals, predominantly physicians, take upon themselves many important functions related to the professional activities of their members. Most of these are related to the quality of physicians' knowledge including: (a) organizing professional conferences and meeting; (b) organizing professional post graduate courses (c) setting working standards, clinical guideline and clinical protocols, etc. In many countries the associations serve also in the capacity of workers' union and negotiate working hours, staffing standard and salaries for employed physicians.

The Workers' union capacity is irrelevant for Georgia, but the physicians' associations should take a more extensive role in improving the quality of work and training of the physicians. In this capacity they are accountable to the government.

An interesting issue is the relationship between the physicians' associations and the PHIC's. These two entities should work together since they have complementary interests and each of them can benefit from the cooperation. The PHIC's are most suitable to execute the guidelines and protocols produced by the associations.

6.4.4. The international NGO and aid organizations

Several international NGOs and aid organizations are active in Georgia, and will continue to do so in the foreseeable future. Health is one of the most favorite fields of activity for them. This MP envisages them as invaluable source of knowledge and financial assistance for Georgia. Since they work

hand in hand with the government, they are part of the improvement process of the perinatal and neonatal field as well. Knowing and understanding their short and long term plans may help the MP and IP in the prioritization process of the strategies and goals. Some examples: (a) UNICEF is one of the initiators of this MP and provided the financial resources for planning and composing it; (b) USAID and JSI are active in training of perinatal teams, an invaluable activity for quality improvement. The activity of both these organizations is endorsed by MoLSHA.

6.5. Change management considerations

The perinatal and neonatal health system in Georgia is at a crucial stage of evolution and growth that we suspect will have an influence on the entire Georgian health system. These evolutionary processes are based and built on a series of well planned changes, all combined in the presented master plan, and spread gradually over the next 15 years.

All changes of systems are major challenges, demanding careful planning, adequate resources, on going guidance, supervision and dynamic adaptation However cross system cultural changes as required by this MP are particularly challenging, complicated and difficult.

There are multiple reasons for potential failure to enact the necessary changes: Typical barriers to change include unexpected alterations in the external conditions, a lack of commitment in implementation, resistance of people involved, or a lack of resources. It is important to note that the implication of failed change projects goes beyond missed objectives. More important is the negative symbolism and the de-motivation of people involved.

6.5.1. Type of changes: There are two main types of change required: Change within specific programs, in this case the PN system, and change

within the organizations that support the learning programs, the global health system.

Both changes; program change (PN system) and organizational change (the global health system) must go hand in hand, since each specific program innovation will generate some need for change in the organization's administration, resource distribution, staff support procedures and infrastructure.

Change management is needed in order to facilitate changes across organizations, borders, and industries. The need for change management in this project/process is a direct result of its complexity and its extent. Bridging the gap between what is happening and what is possible is the basis of change management. One of the important tools available for the promotion and support of the changes required are change agents. The more complex the change process, the greater the difficulty in achieving the goals and the greater the need to utilize the skills and experience of specialist change agents.

6.5.2. Change agents

A change agent is a person whose presence or thought processes facilitate a change in the traditional way of handling or considering a problem.

Change agents turn strategy into reality. In the light of the many problems and risks associated with change projects, the change agent has a crucial function and his/her capabilities can determine the success or failure of the project.

There can be change agents whom are external to the organization such as SMC's experts or facilitators within the organizations. Management consultants are often hired as change agents for corporate organization development retreats.

Change agents can assist in fundamental activities such as in assisting delivery teams make the transition to an outcome-focused culture.

Change agents need to have range of skills including:

- Networking abilities to make constructive contacts and to develop cooperative and productive relationships with a wide variety of individuals and clients;
- Data-gathering skills to be able to collect reliable information on apparent organizational challenges;
- Evaluation and integration skills to correctly assess information and to integrate this information into a coherent picture of the issues warranting intervention;
- Diagnostic and prognostic skills to translate this mass of information into intervention strategies and into a proposed plan of action.

Change agents need to be familiar with a range of different types of interventions that can be used to secure a desired change and to decide on the most appropriate intervention strategy.

Specific requirements normally relate to the actual situation in the organization/country including, culture, strategic relevance of the project, acceptance of the project among management and staff, timeframe, resources etc. Depending on these factors, change agents may either need good project management capabilities in order to guarantee timely progress, or they should be good leaders with the ability to motivate people.

Change agent characterization will be one of the immediate tasks needed for the implementation of the Perinatal and Neonatal care program in Georgia.


7. Master Plan Essentials – Strategies, expected outcomes and implications

7.1. Health Policy

In market driven economy systems, government intervention in the market should be minimal and concentrate on topics where market failure prevails, i.e. when market forces do not create the optimal economic outcomes or where equity issues are of concern, such as the provision of basic care for the needy. Government intervention is also required for the basic role of government in central planning, regulating, setting rules and controlling. Government intervention in the above mentioned topics is also expected at minimum in the health care market. It is also expected that some major and cardinal health facilities, mainly in the hospital sector, will be regarded as national infrastructure and will be financed in full or in part by the public sector. For the sake of GPNP such public investment is required mainly for the establishment of a tertiary level neonatal unit in eastern Georgia. All the strategies suggested in paragraph 7.1.1. are under the jurisdiction of the government.

7.1.1. Strategies

- Financing
    - Most financing by voluntary insurance scheme, with a possibility to change to an obligatory health insurance system.
    - Government financing of the population under poverty line and other well defined subpopulations through special programs.
    - Most services managed and supplied by the private market, including the PHIC. Prices should be set by the market unless a major difference between buyers and payers will emerge (as in a case that the PHIC will have the major buying power. If this happens the government will have to set some of the prices.


- Education and training
    - Set standards for medical schools
    - Set standards for residency programs
    - Set the legal conditions to regulate the nursing profession
    - Set the legal conditions for the academization of the nursing profession
    - Consider re-licensure of physicians.
- Infrastructure
    - Set and enforce basic standards for hospitals and other health facilities.
    - Set and enforce standards for maternities
    - Adopt the stratified model of services
    - Finance, directly or indirectly, critical health care facilities which are not attractive to private investors.
    - Finance, directly or indirectly, a tertiary level neonatal unit in eastern Georgia
- Information Systems
    - Set infrastructure for data transfer across Georgia
    - Secure internet access across Georgia
    - Set the MDS for obligatory reporting to MoLSHA in the PN sector
    - Strictly enforce the reporting policy

7.1.2. Major expected outcomes

Since the information gap between patients and providers in the health market is known to be higher than in most other markets, causing market failure, the government which has more aggregated data and information must closely regulate the market, especially in terms of the quality of services, planning the addition or closure of services, planning future manpower needs etc.

Since government resources are very limited, major investment in infrastructure is expected only for highly essential facilities and equipment. Such government involvement will enable the smooth operation of the health system moving in the path set by the government in terms of direction, amount and quality of services and outcomes desired. The PHIC's which recently entered the market may become the major players, as well as payers in the system and thus determine many of the rules in guiding the health market. Mutual work of the government together with the PHIC's might be of a beneficial effect on health care as has happened in other countries.

- Financing
    - Most population insured
    - Government continues to finance population below poverty line and other programs not attractive to private investors.
    - Most services exist and maintained by market forces. Government step in case of essential services not offered by private investors.
    - Prices drive the market to optimal performance of the health system.
- Education and training
    - Existing standards for medical faculties
    - Existing standards for residency programs
    - Existing regulations for the nursing profession
    - Existing academic programs for nurses
    - Existing standards for re-licensing physicians
- Infrastructure
    - Basic standards for hospital and health facilities are updated and enforced
    - Existing and enforced physical standards for Maternities
    - The stratified model of PN services is adopted.
    - Essential facilities exists even if not financed by the private market
    - A tertiary level neonatal unit in eastern Georgia exists.

- Information system
    - Data infrastructure exists.
    - Internet infrastructure exists.
    - MDS for Perinatology and neonatology exists
    - Reporting is enforced.

7.1.3. Implications

A well defined health policy concerning the PN field where the role of government is clear and strictly enforced will have a beneficial effect on all stakeholders since it will allow a greater level of certainty which is essential for both long term planning and implementation of the plan as well as a greater willingness of private entrepreneurs to invest in owning or managing health care facilities.

7.2. Financing

As previously stated, financing of the perinatal system (as with any other part of the health care system) can be divided roughly to two components:

- Financing of investment in infrastructure and equipment;
- Financing of the running expenses and actual operation of the system.

Regarding the running expenses, it is expected that the payments for the services will cover the running costs whether the payer is the government, insurance or out of pocket. As for investment in rebuilding or even maintaining health facilities, the maternities and neonatal units require major renovation process for which there is no overt financial solution in the near future. However the investment needed for maternities and neonatal units alone appears to be relatively small.

7.2.1. Strategies

- Prioritize financing equipment supplementation to high volume maternities lacking basic equipment suitable to there ranking in the stratified model scheme. Source - governmental
- Prioritize financing equipment supplementation to level II and III neonatal units lacking basic equipment. Source - governmental
- Delay financing of major renovation to the second third of the MP unless private or philanthropic sources are available

7.2.2. Major expected outcomes

- Prioritize financing equipment supplementation to high volume maternities lacking basic equipment suitable to there ranking in the stratified model scheme. Source - governmental
- Prioritize financing equipment supplementation to level II and III neonatal units lacking basic equipment. Source - governmental
- Delay financing of major renovation to the second third of the MP unless private or philanthropic sources are available

7.2.3. Implications

In the first 5 years of the MP the available resources should be invested in modern equipment rather than rehabilitation of buildings since equipment has a better direct effect on patients' safety and outcome. It is believed that rehabilitation/renovation of facilities can start in 5 years time and be completed towards the end of the MP period. When resources become available, the financing of a tertiary level neonatal unit should receive a high priority.

7.3. Organization of services:

7.3.1. Suggested structure of the stratified model of PN services

7.3.1.1. Antenatal Care

Good antenatal care is a basic requirement for perinatal treatment. Although not a complicated program, antenatal care must be performed rigorously and methodologically in order to achieve its main goal of identifying and treating any deviation from the normal progress of pregnancy. Any abnormality in the maternal health status or abnormality of the pregnancy, genetic, developmental or resulting from any pregnancy complication should be identified and appropriately managed as early as possible. All clinical information obtained during the primary antenatal care must be available to all subsequent levels of obstetric and neonatal perinatal care. The 4 antenatal visits and the required clinical tests to which all pregnant women are entitled free of payment, if performed according to appropriate medical standards, should enable diagnosis of the large majority of obstetrical complications. Additional antenatal examinations and tests which provide more information, but are not included in the basic package of services, are beginning to be developed in Georgia. With time some of them may be included in the standard requirement of antenatal care and will have to be introduced into the basic package of services. These include technologies such as, pre-pregnancy genetic screening and genetic counseling, amniocentesis, nuchal translucency, first and second trimester screening tests and high level ultrasonic detection of fetal malformations and developmental abnormalities are just a few of the current modern antenatal screening tests available. Some of these will be performed routinely and some will be required only in special cases.

The most important issues in this section are:1) promoting the availability and accessibility of all routine visits and tests for all the women, 2) training of medical staff to comply with the protocols and guidelines for antenatal care

and 3) referring women with any abnormal findings to the appropriate level of treatment.

The assessment and follow up of abnormal conditions in pregnancy identified at routine pregnancy visits requires special expertise and technologies generally not available in primary care centers. The establishment of ambulatory clinics for moderate or high risk pregnancies as part of the Level II maternities is of prime importance. Furthermore, some complications of pregnancy are too severe to be managed in ambulatory clinics and require hospitalization, either at the level II maternities or, for the most complicated potentially life threatening cases at the level III centers.

The proposed antenatal care system is composed of 4 levels aiming to provide appropriate care to the 70,000 pregnant women per year:

Level A - Routine antenatal follow-up of all women

Level B - Moderate/High risk pregnancy ambulatory clinics for about 15% of the pregnant women (10,000 per year). These clinics will preferably be located in the II and III level maternities and should be managed by their obstetricians, thus enabling continuity of care for these more complicated pregnancies. We estimate that an average of 2 additional physician visits will be required for each of these women, totaling 20,000 visits per year for the whole country. This represents the relatively small number of about 50 visits/maternity/month. The professional staff of the maternity will be responsible for the Level B ambulatory clinics, thus establishing a continuity of care for these patients during the perinatal period, labor and delivery and during the post-natal period. Level B ambulatory clinics can be located outside of Maternities, provided that their staff has some affiliation to one or more of the maternities, preferably as members of the maternities' staff

Level C – 1.5/1,000 of the deliveries will require Antenatal hospitalization for an average stay of about 7 days. Most of these women can be managed in the II level maternities and will require approximately 110 beds for the whole country or an average of 2 bed per 1,000 deliveries maternity.


Level D - About 0.4/1,000 of all deliveries of the hospitalized pregnant women will require the expertise of a level III maternity with an average hospitalization time of about 14 days. This will require 28 beds for level D ante-natal patients, in each of the two level III maternities. Level III maternities will also hospitalize level C ante-natal patients.

The proposed structure of the antenatal care system including the data discussed in this paragraph is summarized in table 4.

Table 4: General structure of the proposed antenatal care system in Georgia

Function	Care-Giver	Location	Patients	Estimated No./year	No. Beds	ANC beds/ Maternity
Routine ANC screening and care	Primary Physicians/primary Ob/Gyn	WCC/PHC	All pregnant women	70,000	None	None
Ambulatory high risk ANC	Ob/Gyn	Outpatient high risk clinic in Level II Maternity	High risk ambulatory pregnant women	10,000 (15%)	None	None
High risk ante natal hospitalization	Ob/Gyn	Level II/III Maternity.	All pregnant women in need of pregnancy related inpatient care with exclusion of very high risk cases	1.6/1,000 deliveries	110	2
High risk hospitalization	Ob/Gyn	Level III Maternity	Very complicated hospitalized parturients	0.4/1,000 deliveries	28	14

7.3.1.2. Maternities

7.3.1.2.1. The combination of normal physiological processes together with relatively rare, acute severe complications of pregnancy demand a system for early detection, together with high quality standardized guidelines for intervention, and skilled and experienced professional medical and

midwifery teams. All maternity units should have the infrastructure, the technologies (including drugs) and the equipment necessary to diagnose and treat such complications. These include among others: trained manpower, medications, access to blood and blood products, an operating theater and more, all functioning around the clock in full professional capacity. The minimal standards required for Maternities are documented in Annex B, according to the level of Maternity. It is also highly recommended that the maternity departments be located within multipurpose hospitals or at minimum be in close physical proximity to such hospitals.

7.3.1.2.2. The Maternity inpatient services should be stratified as follows:

- Level I Maternities- Can provide basic delivery services for completely normal physiological deliveries. They have very limited physical and clinical capacity and should be regarded as emergency facilities in cases where a level II maternity cannot be accessed. Very few such Maternities can be recommended and only in very isolated areas. Even so, women should be encouraged to avoid level I maternities and plan their timetable to be able to arrive to a II level maternity. Surgeries, including Cesarean Sections should not be allowed in level I Maternities.
  The 15-25 beds hospitals currently being built by the PHIC's cannot have obstetrical capacities except from being able to serve emergency normal deliveries. They will not have the physical conditions or the level of expertise required to perform any kind of sophisticated obstetric or neonatal activity and might be risky for mothers and neonate if they attempt to do so.
- Level II maternities, either newly established or upgraded, will provide the major component of the obstetric services throughout the county. It is anticipated that approximately 40 level II units will provide high level obstetric care for both normal uncomplicated deliveries as well as being

capable of dealing with most high risk pregnancies and all emergency pregnancy and delivery complications. These departments will all have the required infrastructure, manpower, technologies etc as noted above (7.3.2.1.1.) and in Annex B .It is estimated that an average of 1-2 bed per 1,000 deliveries will be required in each level II maternity for the antepartum admission of pregnancy complications such as severe hypertension, premature labor, antepartum hemorrhage, multiple pregnancies, intra-uterine growth retardation etc.

- Tertiary care perinatal centers for the most complicated pregnancies and deliveries. The plan envisages total of 2 facilities for the admission and management of very high risk and complicated pregnancies, mostly those which require interdisciplinary management such as nephrologists, neurologists, neurosurgery or other medical specialties. Centers of this level must be located within tertiary multipurpose medical centers with capabilities for all medical and surgical specialties, intensive care etc. Approximately 4-5 women per 1000 pregnancies will require admission to these specialized high risk wards, with an average total hospitalization of 14 days. Hence, a total of approximately 12-14 beds are required for these admissions.
- We believe that only maternities which deliver at least 1,000 per annum can acquire and maintain the necessary clinical experience and equipment to offer quality and safe maternity conditions for the women of Georgia. Unfortunately, at present, about 50% of maternities do not fulfill this requirement.

  In some cases, especially in regions where there are few deliveries, it may be acceptable that a level II maternity delivers a minimum of 600 deliveries annually. However, it is recommended that both the medical and nursing staff of such low intensity maternities be required to periodically receive additional training hours in larger units in order maintain the necessary

clinical skills.. These smaller maternities should not be permitted to train students and residents.

The total number of maternity houses, units or wards should not exceed 50 in Georgia (Level II + Level III)

7.3.1.2.3. Basis for estimation of maternity bed requirement:

- Post Partum hospitalization following a physiological delivery – 3-4 days
- Post Partum hospitalization following a Cesarean Section – 5-7 days
- Cesarean Section rate – 25-30%
- High Risk Pregnancy beds – 1-2 per 1,000 deliveries.
- For Level III Maternities – a total of12-14 high risk beds are suggested n for the management of the most complicated pregnancies.
- Occupancy rate – 80%

Total Maternity beds –14 per 1,000 deliveries = 980 / 70,000 deliveries

Delivery room beds – 2-3/1,000 deliveries (depends on the volumes of deliveries in each maternity. Smaller ones will require more beds per 1000 deliveries than larger ones. See also Table 5.

Table 5: A summary of the proposed stratified Maternity system. Number and type of facilities, and number of beds.

	Level III	Level II	Total
Number	2	40-45	44-46
Deliveries in Center	>1,000	>1,000	70,000
Beds per Unit:			
High Risk Pregnancy	28	1-2/1,000 deliveries	~140
Post Partum	12/1,000 deliveries	12/1,000 deliveries	840
Delivery Room	2-3/1,000 deliveries	2-3/1,000 deliveries	140-170

7.3.1.3. Neonatal Units

7.3.1.3.1 Every level II and III maternity unit should have a neonatal facility which can provide neonatal resuscitation techniques. It is recommended that the two Level III Maternities will have Level III neonatal units, It is also preferred that the other 4-5 Level III Neonatal units be located together with Level II Maternities. It should be noted that at the present time, 2 level III Neonatal units in Tbilisi (Iashvili and Jabenia) are not integrated with a maternity.

7.3.1.3.2. The neonatal units should be stratified as follows:

- Level I neonatal units which can treat only full term healthy neonates are not recommended and should be reserved only for the very rare cases of Level I Maternities. See paragraph 7.3.1.2.2 for further discussion. Level I neonatal units are not recommended for Level II maternities
- Level II neonatal units, are recommended to be the backbone of the inpatient neonatal system. Such facilities should be a part of all Level II Maternities and be capable of treating all normal neonates as well as infants with a pathology which does not require NICU. The minimal standards required for these units are documented in Annex B.

- Level III neonatal units, are those which can handle all normal or pathological neonates. The minimal standards required for their activity are documented in Annex B.

7.3.1.3.3. Level III neonatal units are characterized by having and operating a Neonatal Intensive Care Units (NICU) and will provide treatment for all very low birth weight (<1500g) or low gestation (<33 weeks) infants, in addition to all other newborns requiring intensive care. At present 6 units exist in Georgia: Tbilisi (3), Gori (1), Kutaisi (1) and Batumi (1). Two of the three Level III neonatal facilities in Tbilisi, (Iashvili and Jabenia), are not associated with Maternities. We estimate that one more tertiary neonatal center is probably needed in the eastern part of Georgia, preferably as a part of a larger hospital providing maternity services. All tertiary facilities require better equipment, especially respirators monitors and incubators. The professional teams, particularly in the facilities located outside of Tbilisi should be better trained in advanced neonatology to reach the clinical capability required for tertiary level care.

As we have learned from MoLHSA, all tertiary level neonatal units are planned to be associated with maternity wards in the near future

7.3.1.3.4. Basis for Estimation of Neonatal care cribs requirement:

Intensive care - 1 per 1,000 deliveries (**70 Beds)**

Intermediate care- 2 per 1,000 deliveries (**140 Beds)**

Continuing care (growing preterm infants) - 3 per 1,000 deliveries **(210 Beds)**

Total Special Care Beds - 6 per 1,000 deliveries (**420 Beds)**

Normal Infant Care Cribs 12 per 1,000 deliveries **(840 Cribs)**

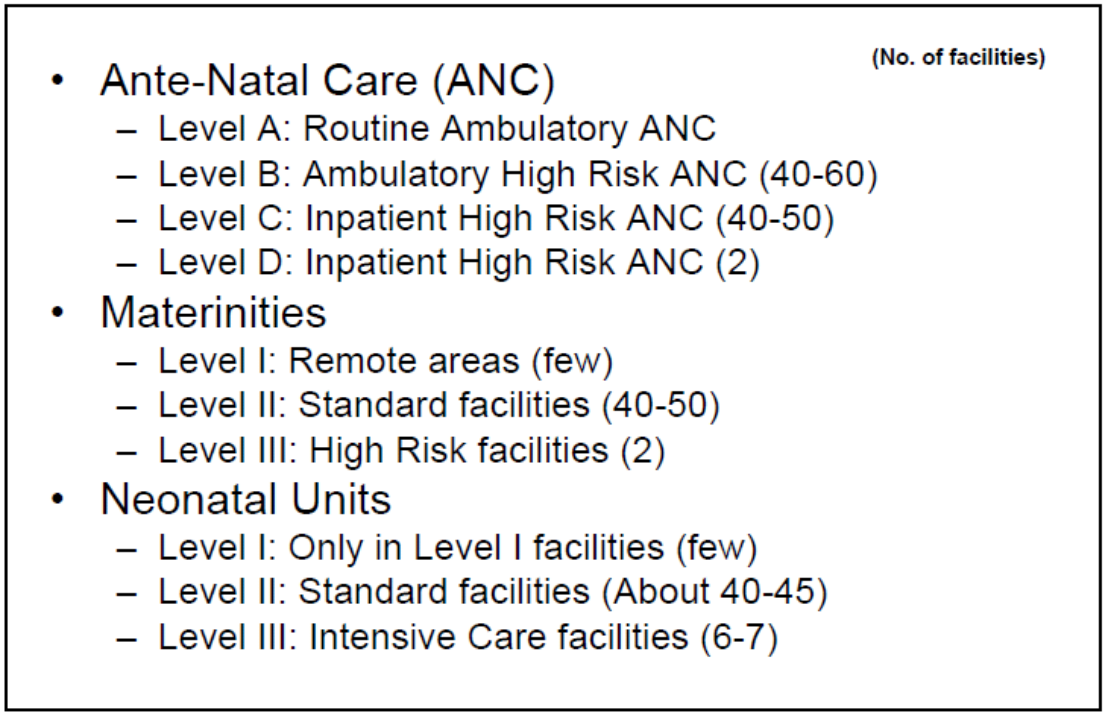
Table 6: A summary of the proposed stratified Neonatal system. Number and type of facilities and number of neonatal cribs.

	Level III*	Level III**	Level II	Total
Number	6-7	2	40	44-46
Deliveries in Center	>1,000	0	>1,000	70,000
Cribs per Unit:				
Intensive	8-12	8-12	-	70
Intermediate	8-12	6-10	2/1,000 deliveries	140
Continuing	10-15	8-12	3/1,000 deliveries	210
Total Special Care	30-40	24-30	5/1,000 deliveries	420
Normal Infant	12/1,000 deliveries	0	12/1,000 deliveries	840

* 2 level III NICU's will be in the hospitals with Level III maternity services

**2 NICUs in Tbilisi without maternity units (Iashvili and Jabenia)

Figure 5: The proposed stratified PN system



7.3.2. Geographic distribution and localization of Maternities and Neonatal units

At present, approximately 90 maternities exist throughout Georgia, with many units performing a very small number of deliveries, some even less than 50 per year. As noted earlier, such small maternities are potentially risky for both the mothers and infants since they are generally not equipped, and their staff does not have the experience and expertise to deal with any perinatal or neonatal complication. We have suggested centralizing all the deliveries in the country, in 40-50 larger, better equipped and appropriately staffed maternities and neonatal units

The proposed designation and geographical distribution of these maternities is presented in the technical paper and map appended to the Master Plan. This will serve as a draft paper for discussion and amendment in the near future, taking into consideration the physical construction of some hospitals as part of the government's "54 Hospitals Plan" and also in relation to the hospitals proposed to be built or renovated by other investors.

The distribution and localization of the maternities as suggested took into consideration the following variables:

(i) The size of the population in the area – The larger the population, the larger the number of maternities considered. On average there are about 15 deliveries /1000 capita/year or about 1000 deliveries for a population of 60,000.

(ii) The number of births per year. The data available is somewhat different from the calculated number in paragraph (i).

(iii) The physical size and transportation conditions of the catchment area of the maternity. In most cases, the driving time from home to a maternity should not exceed 1.5-2.0 hours.

(iv) The driving distance between neighboring maternities.

(v) The distribution of the various areas among the PHIC's. It is preferred that the majority of the inhabitants of a certain area, who belong to one of the insurance companies, would deliver in a maternity located within the same area.

(vi) Whether the existing maternity is a department within a multi-profile hospital or is a stand alone unit. Preference was given to maternities located within multi-profile hospitals.

Optimization of all these variables was at times difficult and designation of the maternities is still not definitive. We believe that the final decision regarding the localization of maternities and neonatal units should be made at a local level including the government, health care professionals and insurance companies.

We are still concerned about the remote, scarcely populated areas as Racha Lechkhm Kvemo Svanety. The region is highly mountainous and in 2008 there were only 150 deliveries in the region, a number which does not justify the establishment of a level II maternity. The northern areas of Samegrello Zemo Svanety and the northern parts of Matkheta – Mtianeti have the same characteristics. These areas cannot support level II maternities and neonatal units either financially or in regard to attaining and maintaining expertise and professional skills. In these areas only, a small number of level I maternities would be permitted. However, as many women as possible should be advised to deliver in the larger facilities outside of these areas.

It is important to note: Most of the recommendations for this section of localizing the maternities are based solely on the information provided by UNICEF. Also, information regarding accessibility, physical conditions and the professional quality of the personnel of each facility is lacking.

We therefore recommend that this list and distribution map be considered as a draft, to be discussed with government and PHIC's officials, as well as with professionals in the health care system.

7.3.3. Prerequisite standards for Maternities and Neonatal Units

7.3.3.1. All prerequisite standards were adapted from USAID (2009) and are summarized in Annex B

The minimum volume of deliveries for any level II and Level III maternities should be no less than 1,000 per year*/**.

Any new maternity will include an equivalent level neonatal unit

Any new maternity will be designed to function as a level II facility

** We are aware of the fact that in a few regions this might be impossible due to the low population density. Therefore, in these regions, a smaller number of deliveries (not less than 600 per year) will be permitted for Level II facilities if all other standards for level II maternities/neonatal units are met and in addition there is a program for a continuous training to maintain the clinical knowledge and experience of the staff. MoLHSA will be the only authority to allow such exceptions.*

*** Level I Maternities can be accepted only in areas where the driving distance from any Level II is more than 3 hours. Women should be advised to deliver in such maternities only in emergent cases of normal pregnancies.*

7.3.3.2. Timetables for meeting the standards

At present several of the suggested facilities are not eligible to be level II maternities and neonatal units according the standards recommended in this Master Plan. Some do not have the required volume of deliveries and some do not meet the standards in their physical conditions, equipment, staffing or working guidelines.

We therefore suggest an “Implementation Period” during which they will be required to adapt themselves to the new standards stated in the chapter “Prerequisites and standards for Maternities and Neonatal units”, as follows:

A. For existing facilities

(i) Physical conditions: 2 years

(ii) Equipment: 2 years

(iii) Contracts: 1 year

(iv) Working guidelines and protocols: 1 year

(v) Acquiring proper professional staff.

(vi) Staff training: 2 years

(vii) Achieving the desired number of deliveries: 3 years

B. For newly built facilities

(i) Physical conditions and equipment: Immediate

(ii) Staffing: Immediate

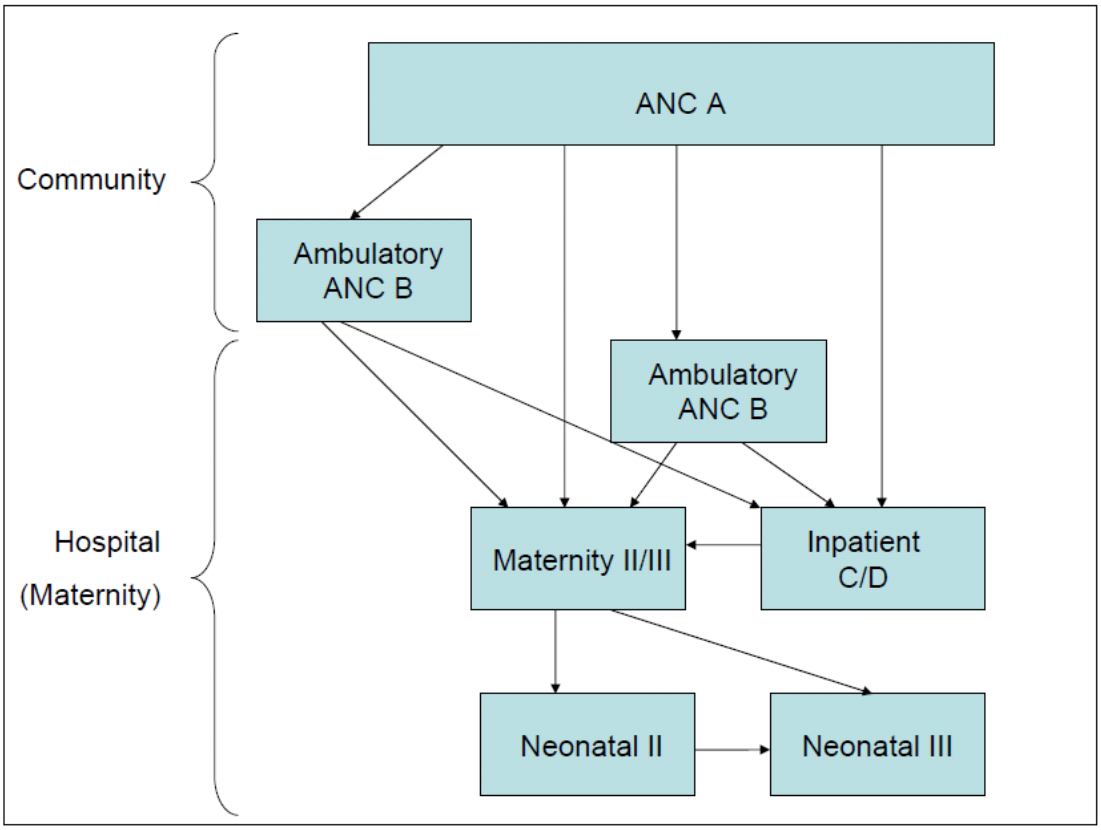
(iii) Contracts: Immediate

(iv) Working guidelines and protocols: Immediate

(v) Staff training: 1 year

(vi) Achieving to the desired number of deliveries: 3 years

Figure 6: Flow of patients along the levels of the PN system



7.3.4. Organization of services: ANC – Proposed final structure

7.3.4.1. Strategies

- Adopt the stratified system of ANC as proposed in chapter 7.3.1. and table 5
- Design and implement antenatal care protocols.
- Train the professionals dealing with antenatal care to comply with the protocols of antenatal care.


- If undertaken by primary care physicians/nurses, training in antenatal protocols and clinical work must be deeper. In such cases supervision by and direct access to a gynecologist for consultation should be mandatory
- Enforce transfer of information among all perinatal care takers.
- Create level II ambulatory ANC for medium-risk and high-risk pregnancies.
- Include level II ambulatory ANC in the basic package of services
- Prepare and teach, through antenatal care professional, educational program for the healthy behavior during pregnancy.
- Encourage all pregnant women to exercise their entitlement to perinatal care.

7.3.4.2. Major Expected outcomes

- Existence of written protocols for major activities in Perinatology and Neonatology, based upon clinical guidelines and EBM.
- Physicians are trained in ANC protocols
- Primary care teams get the extra training needed and performing good quality antenatal follow-up. They are supervised and consulted by gynecologists.
- Clinical information available to all pregnancy related care givers
- Level II ANC system is adopted and implemented
- Level II ANC is included in basic package of services
- Pregnant women receive relevant health behavior education during antenatal visits
- Most women receive at least the antenatal follow-up recommended by the state.


7.3.4.3. Implications

It has been shown in many health care systems, that appropriate antenatal care, at the level similar to the one existing in Georgia can significantly improve perinatal and neonatal outcomes. We thus regard antenatal care as a prime issue in any program for the improvement of perinatal health.

7.3.5. Organization of services: Maternity and Neonatal inpatient facilities - Proposed final structure

7.3.5.1. Strategies

- Adopt stratified model of PN services model
- . Encourage the formal adoption of the standards for perinatal and neonatal facilities as suggested in chapter 7.3.1. and in Annex B
- Supply the existing maternity and neonatal units with the equipment as define in the USAID (2009) report.
- Encourage combined facilities each contains a maternity ward or unit and a neonatal unit.
- Encourage new maternity and neonatal units especially these of level II and III to be located within a larger multifunction hospital.
- Educate the public with the advantages of larger maternities
- Encourage all professional to practicing EBM, clinical guidelines and protocols.

7.3.5.2 Major expected outcomes

A comprehensive system of PN care where each woman is taken care of continuously from the time of conception to the time of discharge of a healthy mother and infant.

- The model of PN services is adopted by the state and the PHIC's
- All maternities have the basic equipment as defined in USAID (2009) report.

- All new neonatal level II and III unites will be built in facilities who hold also a maternity ward.
- All new level II and III will be built within multi-function hospitals.
- 90% of women deliver in high volume maternities.
- All maternities and neonatal units working with the concept of EBM, clinical guidelines and protocols.
-

7.3.5.3. Implications

A stratified perinatal system comprising antenatal care, three levels of inpatient maternal and neonatal services, all linked by a regionally operated and centrally coordinated ambulance service, is the optimal way to organize the perinatal health services. Although most of the services can cover their expenses and even be profitable, thus making them attractive to private investors, it is unlikely that such optimization can be attained solely by free market competition without any central planning. This is the prime role of the government with some participation of the PHIC's.

7.3.6. A Transport System

A professional, efficient and well managed transport (ambulance) system is a key player in the organization of coordinated health care services. In most cases it can replace the existence of low volume facilities, especially those located in close proximity to major cities or secondary level maternity and neonatal units. These transport services can function for any medical emergencies and not only for parturients, making the service more economically sound and effective. It should be noted that the concept of operation of these ambulance services is different from the ones presently operated the “catastrophe centers,” which is designed to transfer patients from one health facility to another one. The proposed ambulance services will be designed to carry patients from their homes to hospitals. The ambulances should be equipped and staffed with the appropriate means for the task. The

ambulance service can be organized in 2 or more levels to adapt to special need such as trauma, neonatal etc.

The advantages of such a system:

- Efficient management of patients during transportation
- High level of availability
- No need for emergency service in every health facility
- No need for in inpatient facility in each rayon.
- More important in countries/areas where private cars are not abundant

An efficient transport system can negate the need for so many small inpatient clinics, which are not efficient, expensive and require many employees, and hence its cost will be significantly lower. The actual service can be provided by private enterprises or local authorities, with a system for national or regional coordination.

7.3.6.1. Strategies

- Encourage the development of ambulance services.
- Set a central control center for all emergency transport services

7.3.6.2. Main expected outcomes

- Existence of centrally coordinated and well organized net ambulance services

7.3.6.3. Implications

Once a comprehensive network of ambulance services is established throughout Georgia, it will be sensible to concentrate deliveries in a smaller number of high parturient volume units. The travel time between patient's home and the hospital will still be shorter than at present, with a high margin of safety for the women since the transport will be provided by teams including at least one paramedic or nurse.

7.4. Infrastructure

The existing health related infrastructures (including health care facilities, especially hospitals, and heavy medical equipment) were built in the soviet era and most have not been renovated since. Most are in bad physical condition and some are uninhabitable. They are the most problematic aspect of the health system since any renovation or rebuilding of them will require funds far beyond the capability of the existing public resources, in addition to being unattractive to public investors.

The infrastructure problems related to maternity and neonatal facilities, are however much smaller and can, we believe, be dealt with in the framework of this Master Plan.

The Master Plan aims to concentrate most of the deliveries in larger, high volume maternity wards located within regional hospitals where possible or in the vicinity of such hospital if an independent birthing facility is planned. Each such maternity should be planned to deliver a minimum of 1,000 women per year Smaller maternity houses be considered only in remote areas where transportation in difficult, especially in winter months, Nevertheless, in each of the maternity units a level I or II nursery should exist. At least one additional tertiary level neonatal unit should be established in eastern Georgia as discussed in chapter 7.3.

7.4.1. Strategies

- Adopt the stratified model of PN services
- Rebuild or renovate level II and level III maternity facilities only, whether independent or in regional hospitals
- Smaller maternity units should be allowed only as emergency measure in such as remote areas.

- Level I or II neonatal units should exist in all maternities at the equivalent level of the maternity.
- Establish one level III neonatal facility in eastern Georgia
- Encourage the establishment and strengthening of regional ambulance services.

7.4.2. Major expected outcome

Even larger maternities are relatively inexpensive to build or renovate and equip whether as a department within a regional hospital or as a stand alone maternity house. Larger, level II maternities will enable safer deliveries by better trained and experienced staff and as a consequence will be preferred by both the population and the professionals. Since rebuilding and equipping the maternities and neonatal units is the largest resource consuming component of the MP we suggest distributing the investment on the total period of the IP starting with small investments for equipment and continuing with larger investments later on. It is believed that the private market and the PHIC's may be interested in investing in level II maternities. However, the Level III neonatal unit will probably have to be built by the government unless a positive monetary flow can be guaranteed

- Level II and III maternities are renovated
- Encourage the establishment and strengthening of regional ambulance services.
- Maternities and neonatal units, put together if possible, located within a multipurpose hospital. Types of maternities and, equipment and locations, are discussed in chapter.
- Small maternities will exist only in case of special circumstances.
- Existence of one level III neonatal facility in eastern Georgia
- Existence of regional, well equipped ambulance services
- All maternities are equipped with adequate standard equipment suitable to their level

7.4.3. Implications

As already noted, only larger maternities and neonatal units can provide both the physical conditions and the professional experience necessary to ensure safe deliveries. If stratification of the system fails to transpire, at least over time, it will be difficult to establish modern norms for the perinatal field in Georgia

7.5. Human Resources

7.5.1. Physicians

As noted above, this MP does not deal with the overall reform needed to strengthen the medical profession in Georgia and prepare it for the predicted trends in medicine. We believe however, that the goals of this MP can be achieved by intensive training of the gynecologists and neonatologists. We base our assumptions on the fact that pregnancy follow-up is relative simple and straightforward and can be satisfactorily accomplished provided that uncomplicated protocols are strictly followed. Most pregnancy complications can be identified early and be treated by a well trained and experienced staff in a few modernly equipped, high volume maternities located within multi functional hospitals .These tertiary level maternities can be located in central cities where the quantity and quality of gynecologists is satisfactory. For neonatologists the situation is similar. While every maternity usually employs a neonatologists or a pediatrician to deal with normal deliveries and with acute conditions of the neonate, premature and complicated neonates are preferably transferred to one of the tertiary care nurseries. Therefore, relatively few highly trained gynecologists and neonatologists are needed to maintain the sophisticated tertiary care facilities.

The shortage of gynecologists and neonatologists in the rural areas is part of the general inequality in the distribution of physicians in Georgia and many other countries. Recently the WHO (2010), published global policy recommendations to encourage health professionals to practice in rural and remote areas. These recommendations include, among others:

- **Education recommendations** like targeted admission policies to enroll students with a rural background, setting part of the curricula outside of major cities, study topics related to rural life etc.
- **Regulatory recommendations** such as provision of scholarships, bursaries or other education subsidies with enforceable agreements of return of service in rural or remote areas to increase recruitment of health workers in these areas.
- **Financial incentive recommendations**, such as hardship allowances, grants for housing, free transportation, paid vacations, etc., sufficient enough to outweigh the opportunity costs associated with working in rural areas, as perceived by health workers, to improve rural retention
- **Personal and professional support recommendations,** such as the improvement of living conditions, work conditions and work safety, and enable career development.

7.5.1.1. Strategies

- A uniform curriculum for basic training for all gynecologists and pediatricians/neonatologists
- Use various training methods including modern ones like distant learning, simulations, computerized training applications etc.
- Train extensively and repeatedly, especially emergency topics and rare acute complications.

- Train physicians to use clinical guidelines and protocols to ensure protocols to standardize clinical activities
- Set measures to encourage movement of physicians to rural and remote areas to practice medicine.
- Primary care physicians/nurses should receive an appropriate training in situations where they are the care givers of ANC..
- Establish a CME program for gynecologists and neonatologists.
- Establish strict state supervision on competence examinations, including
- Encourage the participation of the professional associations of gynecologists and neonatologists in the process of improving the quality of physicians' manpower.
- Reorganize the definition of neonatologists in order to enable them to perform all procedures needed to function in the neonatal units and train them to act comprehensively using these procedures.
- Update the criteria for certification of residency programs and establish the mechanism for their enforcement.
- Update and improve leading gynecologists and neonatologists in the new technologies and procedures in leading international centers.

7.5.1.2. Major expected outcomes

- Standardized curriculae for all levels of formal training of gynecologists and pediatricians/neonatologists exist.
- Standard use of a variety of modern training methodologies.
- On going regular training programs in emergencies and rare complications exist for gynecologists and neonatologists.
- Protocols for ANC, delivery and neonatal care exist and enforced.
- An effective program to encourage gynecologist and neonatologists to practice on rural and remote areas exists and is functional.
- Primary care physicians/nurses are trained to use antenatal care protocols in situations where they are the antenatal care providers..

- CME and OJT programs for gynecologists and neonatologists exist.
- A strict standardized supervision of certifying examinations which are annually updated and include memory and medical competence subjects.
- The professional associations of gynecologists and neonatologists are actively involved in the on going process of improving the quality of physicians' manpower.
- Neonatologists have the legal permission and professional training to perform any procedure in the neonatal unit and NICU .
- Existing and enforced updated criteria's for residency programs.
- Encourage and if possible support training of leading gynecologists and neonatologists in leading international centers.

7.5.2. Nurses

As noted above, the shortage of nurses and their low professional quality is deep and profound and calls for a broader intervention. We therefore decided to suggest some major strategies for the improvement of the nursing field as a whole although we emphasize the needs in midwifery and for the nurses dealing with prenatal care and care of the neonate.

7.5.2.1. Strategies

- Continue the reform in nursing education by enhancing academization of the profession.
- Offer the academic nurses higher professional responsibility
- Keep some of the non-academic schools for second lower level nurses (practical nurses or nurse assistants) for the simple and less sophisticated nursing activities.
- Regulate the nursing profession
- Regulate the nursing schools of all levels with a unified curriculum and standards of operation for each level

- Set a legal regulation of the profession through certification and licensing and establish the status of an Academic Registered Nurse (RN)
- Establish a campaign to improve the social status of the profession.
- Set a compulsory period of internship for nurses
- Design and operate a set of certification examinations for all level of nurses
- Set higher level courses for nursing specialties as midwifery, intensive care, dialysis etc.
- Establish OJT programs to maintain and improve nursing proficiency
- Encourage minority women to choose nursing as a profession.
- Set incentives for high quality nurses to practice in the rural and remote areas.

7.5.2.2. Main expected outcomes:

- Several Bachelor level programs exist.
- An existing level of academic nurses serving at the higher nursing positions alongside the physicians to practicing modern medical and surgical techniques and protocols, and useing up to date information technologies.
- Some vocational level nursing school train "practical nurses" who will be responsible for the simpler and less sophisticated nursing activities.
- Good quality, updated and regulated profession with standardized certification examinations for all level of nurses
- Nursing is accepted as a career opportunity for young educated middle class women
- Competent midwives and intensive care nurses as well as nurses trained in ANC and normal neonatal care
- Secure OJT for all nurses especially midwives, intensive care, prenatal care and neonatal care nurses.
- Availability of good nursing practice in the rural and remote areas.

7.5.2.3. Implications

Qualified, well trained professionals are the single most important factor in establishing a health care system. Georgia has a reputation for its good physicians as well as for its quality professional educational institutions. With the breakdown of the Soviet empire, the independent Georgia approached the new found democracy with a high level of deregulation which in many cases preceded central quality control, resulting in a large number of new and less professional educational facilities. Market forces are unlikely to solve this problem in a short period of time and government intervention is inevitable in order to achieve the primary goals of: (a) improving the quality of educational institutes and through them the quality of health care professionals, (b) establishing governmental certification and licensing for nurses, and (c) securing health care professionals for the rural and remote areas. The fulfillment of these 3 goals will, significantly promote PN outcome. The existing of premium level Academic nurses will enable modern medicine. It will also serve to attract more competent individuals to the profession and will markedly improve the status and public perception of the profession

7.6. Quality

Quality service in terms of safety of clinical practice, using up to date, evidence based norms, guidelines, and protocols, together with experience and information sharing is the essence of modern medicine. While relatively easy to define, these parameters are difficult to accomplish. The following are the strategies which will improve the quality of services. Accreditation of medical facilities, predominantly hospitals and laboratories, usually by a third party organization is a good tool which provides an overview the entire facility, hence enabling the creation of a better and safer environment for the patients.

7.6.1. Strategies:

- Continually improve the quality of care sector-wide and at all levels of care
- Further develop standards, guidelines and indicators, all based on EBM, for health care services
- Consider Accreditation by an independent national or international organization.
- Increase transparency in the system to enable MoLSHA, PHIC and patient a fair judgment on the quality of services
- Add quality measures to the requirement of the buyers in the system

7.6.2. Main expected outcomes

- Sector wide quality management system established and operational
- Self assessment of doctors and health professionals continuously coordinated and evaluated
- Increased participation of professional associations and interested stakeholders in quality of care improvement
- Active participation of MoLSHA and PHIC in the drive for quality
- Appropriate quality of care standards, national clinical outcome indicators, and guidelines approved in conformity with international standards and applied.

7.6.3. Implications

There is relationship between the quality of care and the attitude and competence of the service providers. The setting up of quality assurance programs (policies, standards, guidelines and procedures) preferably by the largest buyers, the government, through HeSPA, and the private insurance companies should be accompanied by a change in attitudes and clinical competence of the service providers. Otherwise, the envisaged improvements in the quality of care would not be achieved. Another important factor to improve quality is the optimization of Maternities both in physical infrastructure

and in the maternity system organization (Number of maternities, their distribution and stratifications to levels of care. We believe that the limited resources of money and trained personnel should be focused on a more manageable number of well run maternities.

Achieving quality services is a multifactor issue in addition to the specific measures discussed above. Establishing a quality culture is a long-term affair. It will require the commitment of all stakeholders and in particular the involvement of the private insurance companies and the professional associations, effective client representation and involvement of the civic society which is expected to develop throughout the MP implementation period.

7.7. Health Related information and Information Systems

As mentioned above, this key area is of prime importance since without real time reliable information; appropriate monitoring of the MP will not be possible. Furthermore, many other key areas use information and information technology as a tool in their programs for improvement. The modern world has discovered the power of information and the necessity for immediate access to information. The ease of accessing and using the internet as the backbone for information transfer may help in creating a nationwide, internet based enterprise much earlier than expected

7.7.1. Strategies

- Set PN information systems high in the prioritization list of the field
- Create uniformity in clinical data by establishing a minimal data set (MDS) for PN
- Availability of clinical data to all care givers
- Build a national reporting data set for Perinatology

- Computerize data acquisition and the reporting system
- Create national registries for major PN problems
- Set a comprehensive policy regarding transparency of health related information
- Set a national policy regarding the privacy of health related information
- Advocate the use of Electronic Medical Records (EMR) in PN
- Use IT for training of health care personnel.

7.7.2. Major expected outcomes

- PN information system is set as one of the most important and relevant issue in the improvement of the PN field
- A uniformity of clinical MDS in PN
- PN data available to all clinical caregivers
- A defined data set is reported to regulators and payers
- Computerized data acquisition transfer and reporting system for PN is functional
- National Registries for major PN complications exsist
- Transparency of relevant information to the public.
- Privacy of health information protected by law
- Electronic Medical Records in PN
- Computer based health care training programs are available to all students and professionals.

7.7.3. Implications

Fragmentation of clinical data is considered to be one of the main obstacles in creating a safe care giving environment and in enabling the clinical staff to provide optimal services. Therefore, creating a system which will ensure clinical data recording, transferring among care givers and reporting to the

authorities is one of the first priorities of the IP. Once a MDS is defined, the enforcement of data collection, transfer and reporting is the crucial part. This can be achieved through a linkage between data handling and payments. Since all basic PN activities are paid by the government or the PHIC, this is a straight forward decision. Furthermore, the financial cost of such a decision is negligible, while the current traditional methods of data management i.e. handwritten patient files and reports are maintained.

Once more resources are available, a gradual shift to digitalization of the information system will take place. For this, a primary modest investment in hardware and generic software is recommended for the care givers. Later, a wider and more comprehensive electronic system, with a much larger investment, which will connect suppliers to payers and government and will be able to analyze the data and create national data bases and registries, is inevitable . We believe that this process can be considered in latter half of the implementation plan.

Private health data must be considered as the property of the patient as one of the basic human rights. However, the more electronic data management is utilized, the easier is accessibility of private health data. In most democratic societies, special laws had been passed in order to protect this privacy and the Georgian government should proceed in this direction.

Finally, the question of transparency of information should be addressed. It is widely believed that the universal availability of accumulated health data at the level of the facility and above improves clinical performance and helps patients and payers to make better decisions concerning the choice of providers. This, of course, should be done in a way which would not scare patients or health care professionals since the latter might feel threatened by potential punitive measures and, consequently, refuse to cooperate.

7.8. Special Populations

The key to success in closing the gap in perinatal health status between the special subpopulations and the remainder of the Georgian people is to adapt


the health system to the special requirements of the specific subpopulation rather than enforce the health system on the subpopulation. Furthermore, we believe, that a future improvement in the standard of living occurring as a result of a stable and growing economy, will positively affect the health status of these populations. Physical infrastructure such as roads, communication networks and improved housing will affect health in the same direction.
As noted previously the term special population means that these people should receive extra, specially adapted health related resources in addition to the regular budget allocation. The strategies and expected outcomes to be recommended in this chapter are those unique to these subpopulations. Recommendations found in other chapters are added to them when applicable.

7.8.1 The Azeri and the Armenian minorities.

The major difficulty of these groups is the diminished access to health services resulting from: lower level of infrastructure, shortage of health personnel, difficulty in verbal and written communication and differences in cultural behavior. It should be noted that the current language policy of the government is to encourage the studies and utilization of the Georgian language. Although this policy will be beneficial in the future it might alienate the minorities to any verbal and written government activity such as health promotion.

7.8.1.1. Strategies

- Improve infrastructure and accessibility to health care services
- Encourage minority youngsters to enter health professions
- ,In the short term train existing healthcare personnel in their native language/
- Encourage health professionals to practice in the minority regions

- Health promotion programs in native language with contents adapted to native culture

7.8.1.2. Main Expected Outcome

- Infrastructure similar to that in other regions or better
- Minority youngsters graduate both vocational and academic health professional schools
- Existing health personnel is being trained in native language
- An adequate number of well trained health professionals
- Minority population is well informed regarding healthy lifestyle and measures to take when pathology is suspected.

7.8.1.3. Implications

Most of the expected strategies in this chapter are conceptual and require policy change rather than a concrete, well defined and applicable project. Therefore, even with an obligated decision to adopt them, it will still be a long term process to achieve the expected changes and improve perinatal/neonatal outcomes. Such a decision should however be adopted in the short term in order to enable initiation of the process.

7.8.2. Inhabitants of remote areas.

The difficulty to provide high quality and safe medical services to inhabitants of remote, scarcely populated areas with limited accessibility is a challenge to any nation. Most of the solutions suggested are based on the provision of a limited (usually level I) multipurpose health facility manned by trained non-local personnel who acquires their training and clinical experience outside of the area. Such personnel, usually stay for a relatively short periods of time and are replaced by others with the same qualities. Few professionals choose to reside in these locations, and furthermore may loose their clinical skills

within a few years. Another possible solution is to establish only basic low level emergency services in these areas manned by local personnel who treat only simple conditions and stabilize emergency cases, combined with an efficient transport system for transferring more complicated cases to appropriate health care facilities outside of the remote area.

When this model is adapted to perinatal and neonatal care, the system should be organized as follows:

7.8.2.1 Basic antenatal care – by combined local clinics and mobile antenatal units

7.8.2.2. Second level antenatal care. for complicated pregnancies – undertaken outside of the region (transportation provided and paid for by the insurer or governmental program)

7.8.2.3. Medium and high risk deliveries – performed outside of the region

7.8.2.4. Normal low risk deliveries – preferably performed outside of region, allowed in region only in extraordinary cases. This requires that women be advised to spend the last weeks of pregnancy outside of the region.

7.8.2.5. An efficient ambulance service.

Establishing such a model will enormously improve the quality of pregnancy care and may be less costly than maintaining maternity houses in several locations in the region. It must be emphasized that several components of the model exist already but successful operation will require supplementation of the missing parts, coordination of its components and allocation of the resources.

7.8.2.6 Strategies

- Adopt and implement the mother and child model for isolated and scarcely populated regions
- Educate the population regarding the best end user utilization of the model
- Promote healthy behavior an healthy life style for remote areas

7.8.2.6. Main Expected outcomes

- Mother and child model for isolated , remote and scarcely populated regions (ANC by locals + mobile units, hospitals – outside of region, efficient ambulance services).
- Population knows and understands the model and uses it efficiently
- Healthy life style is is promoted.

8. Implementation Plan

8.1. Implementation planning

Many MP have not been carried out for the lack of a detailed sustainable implementation plan which includes the following components: (a) a body to supervise and report on the progress of the IP; (b); a mechanism to adapt the MP and IP to the continually changing internal and external conditions which affect the health care system in general and especially the PN field; (c) a clear view of the final goals and milestones translated into specific feasible targets and (d) a strategic commitment to the effort of improving the PN field.

It should be noted, that the MP is primarily a comprehensive technical, non political long-term planning document that can be implemented by any government irrespective of its ideology or political mandate.

However, some major adaptations will have to be made in the MP if the policy of privatization or the role of PHIC's in operating the system changes. Furthermore, financial difficulties may delay the rate of progress of some parts of the MP but not invalidate it altogether.

8.2. Implementation overseeing and control

Once implementation begins, it will not automatically continue indefinitely. On the contrary, in the best case scenario it usually slows down, or becomes diverted to unplanned directions or may even halt completely. Moreover without constant nurturing, in many cases even the strongest commitment eventually erodes. It is therefore advisable to appoint a task force to oversee the progression of the implementation plan and report on a regular basis to the stakeholders. This professional task force, named "Master-Plan

Overseeing and Control Task Force" = MOCTaF should have a clearly defined structure and strict term of references.

8.2.1. MOCTaF Structure:

MOCTaF will consist of two distinct arms:

8.2.1.1. A Technical unit: will collect data, make a basic analysis, write and publish the annual reports. This unit should be located within MoLHSA or any of its agencies, integrated into a department or a unit which has a capacity to collect data, make a primary data analysis and prepare the data for publication. We assume that the manpower required for this is 3-4 part time employees. SMC will advise the unit on topics related to data collection and report writing.

8.2.1.2. A Steering committee: whose task will be to oversee the IP and suggest adaptations and amendments of the MP and/or IP. The steering committee will be composed of the following members

a. 2 representatives of the MoLSHA
b. 1 representative of UNICEF
c. 1 representative of NRHCG
d. 1 representative of the OB/Gyn Society
e. 1 representative of the Neonatological Society
f. 1 representative of the MoF (or MoED)
g. 1 representative of PHIC's
h. 2 representatives of SMC

8.2.2. MOCTaF term of reference:

8.2.2.1. The implementation plan as delineated in the appropriate chapters of this Master plan.

8.2.2.2. To create the reports by the types and timetable as specified in table 5.

8.2.2.3. To create a mechanism for assessing acute problems in the implementation plan and to promote solutions.

8.2.2.4. To make the reports created during the IP available for the public unless the steering committee has chosen to omit publication of a report or certain parts of it.

8.2.2.5. MOCTaF will open a web page to report its activity to health professionals and the general public

It must be stressed that MOCTaF will not have any regulatory or decision making power and will act only as an observer of the implementation process and a body for assessment and advising on the need for adaptation of the implementation plan and/or the master plan to future changing realities. The final decisions, prioritization and resource allocation will be undertaken by the relevant government authorities.

8.2.3. Types of reports to be written by MOCTaF and SMC (Table 5 :)

8.2.3.1. An annual progress report, addressing the progress in each of the topics of the MP. This report will present the activity taken during the year in the Key Areas of Work. The actual collection of data will be made by the statistical department of NCDCPH acting as the technical unit of MOCTaF. The report will be written by MOCTaF with the aid of the SMC team, and will be distributed to MoLSHA, UNICEF, NRHCG, SMC and the other members of the steering committee. The report will be completed by the end of March following the reference year.

8.2.3.2. An interim reevaluation report, which supply a deeper analysis of the developments in the relevant fields of perinatology and neonatology in Georgia and abroad and their effect on the Master Plan and its implementation. The final draft of the report will be written by SMC and will be distributed to all members of the steering committee. The committee will than discuss the report, and recommend modifications of the IP if needed. These recommendations will be added to the final version of the interim reevaluation report

8.2.3.3. A fundamental reevaluation report, which will describe the advancement of the implementation plan, analyze strengths and weaknesses of the process, and note any deviations from the Master plan The report will be written by SMC and the final draft will be presented to steering committee for discussion and recommendation for the necessary amendments in the activity and/or time-table in order to return to the desired implementation track of the MP.

8.2.3.4. Special reports will be written down in cases of a major change in the environment which may significantly affect the perinatal/neonatal field. Events which may necessitate such a report may include, among others: A major political change with a completely different social or economical agenda, a major war, a major reform in health care etc.

8.2.3.5. A final report summarizing the MP and suggesting further means to maintain and improve the perinatal and neonatal field.

8.2.3. The role of SMC in the overseeing and controlling process: According to the MOU signed on August 15, 2009 between MoLSHA, NRHCG, UNICEF (Georgia) and SMC, the role of SMC includes the long term accompaniment of the implementation of the Master Plan and the undertaking of a bi-annual assessment and adaptation of the Master Plan. Also, SMC will conduct any consultation and health personnel training at the request of MoLSHA. Therefore, SMC can be the overseeing agency suggested in paragraph 2 under the authority of MoLSHA, or it can serve as a consultant to a Georgian appointed agency preferably within MoLSHA or subject to MoLSHA. In this case SMC and the agency will have to work out the nature and extent of the services provided by SMC to the Agency.

Table 7: Types of reports to be submitted by MOCTaF during the period of the MP

Report name	Report type & role	Written by	Submitted to
Annual Report	Data collection, submission and discussed with Steering Committee	MOCTaF aided by SMC	Steering Committee
Interim Reevaluation Report	Deeper evaluation and analysis for 2 year data, including professional advancements + minor correction of MP and/or IP.	MOCTaF + SMC, Recommendation by Steering committee	Steering Committee, Government, other Stakeholders
Fundamental Reevaluation Report	Deeper evaluation and analysis for 4 years of data collection + analysis of external relevant information like political, economical and social areas. Deep reevaluation of the MP and the IP and suggestions for their adaptation to achieve MP goals. To be submitted and discussed with MoLSHA and other stakeholders	SMC aided by MOCTaF. Recommendations by Steering Committee	Steering Committee, Government other Stakeholders
Special Report	A special report will be written upon occurrence of major events which can affect the MP or the IP	SMC + MOCTaF	Steering Committee
Final Report	This report will written during the last year of the implementation plan	SMC	Steering Committee, Government, other Stakeholders

8.3. Primary organization of Implementation Plan

The implementation plan is organized as a table in the following format:

Columns headings:

1. Name of priority issue


2. Name of strategy
3. Final goal for the strategy (Usually defined as the expected outcome or fulfillment of strategy)
4. (4a, 4b…) Milestones for the strategy (as many as needed in 2-3 years intervals)
5. Responsibility for the implementation of the strategy and achieving the goals.
6. Costs (when available)
7. Responsibility for financing the implementation of the strategy
8. Gant timetable (starting date, time frame, and expected ending date). Since long term processes are described, the interval sensitivity will be 6 months.

Rows heading – Individual priority issues and strategies

8.4. A summary of all strategies and goals by priority issues

8.4.1. Policy

Strategies

- Financing
  - Most financing by voluntary insurance scheme, with a possibility to change to an obligatory health insurance system.
  - Government financing of the population under poverty line and other well defined subpopulations through special programs.
  - Most services managed and supplied by the private market, including the PHIC. Prices should be set by the market unless a major difference between buyers and payers will emerge (as in a case that the PHIC will have the major buying power. If this happens the government will have to set some of the prices.

- Education and training
  - Set standards for medical schools
  - Set standards for residency programs
  - Set the legal conditions to regulate the nursing profession
  - Set the legal conditions for the academization of the nursing profession
  - Consider re licensure of physicians.
- Infrastructure
  - Set and enforce basic standards for hospitals and other health facilities.
  - Set and enforce standards for maternities
  - Adopt the stratified perinatal system
  - Finance, directly or indirectly, critical health care facilities which are not attractive to private investors.
  - Finance, directly or indirectly, a tertiary level neonatal unit in eastern Georgia
- Information Systems
  - Set infrastructure for data transfer across Georgia
  - Secure internet access across Georgia
  - Set the MDS for obligatory reporting to MoLSHA in the PN sector
  - Strictly enforce the reporting policy

Major expected outcomes

- Financing
  - Most population insured
  - Government continues to finance population below poverty line and other programs not attractive to private investors.
  - Most services exist and maintained by market forces. Government step in case of essential services not offered by private investors.
  - Prices drive the market to optimal performance of the health system.
- Education and training
  - Existing standards for medical faculties

- Existing standards for residency programs
- Existing regulations for the nursing profession
- Existing academic programs for nurses
- Existing standards for re-licensing physicians

- Infrastructure
  - Basic standards for hospital and health facilities are updated and enforced
  - Existing and enforced standards for maternities
  - The stratified model is adopted.
  - Essential facilities exists even if not financed by the private market
  - A tertiary level neonatal unit in eastern Georgia exists.

- Information system
  - Data infrastructure exists.
  - Internet infrastructure exists.
  - MDS for Perinatology and neonatology exists
  - Reporting is enforced.

8.4.2. Financing

Strategies

- Prioritize financing equipment supplementation to level II and III neonatal units lacking basic equipment. Source – Private or governmental for level II, governmental for level III
- Delay financing of major renovation to the second third of the MP unless private or philanthropic sources are available
- Level II ANC should be added to basic package of pregnancy

Major expected outcomes

- All level II and III facilities will have adequate equipment in 5 years

- Gradual renovation of maternities. To be completed in 10 years. Rate of renovation depends on resource availability
- Include level II ANC in pregnancy package in 5 years

8.4.3. Organization of services

8.4.3.1. Antenatal Care

Strategies

- Adopt the stratified system of ANC as proposed in chapter 7.3.1. and table 5
- Design, implement and execute antenatal care protocols.
- Train the professionals dealing with antenatal care to comply with the protocols of antenatal care.
- If undertaken by primary care physicians/nurses, training in antenatal protocols and clinical work must be deeper. In such cases supervision by and direct access to a gynecologist for consultation should be mandatory
- Enforce transfer of information among all perinatal care takers.
- Create level II ambulatory ANC for medium-risk and high-risk pregnancies.
- Include level II ambulatory ANC in the basic package of services
- Prepare and teach, through antenatal care professional, educational program for the healthy behavior during pregnancy.
- Encourage all pregnant women to exercise their entitlement to perinatal care.

Major Expected outcomes

- Existence of written protocols for major activities in Perinatology and Neonatology, based upon clinical guidelines and EBM.
- Physicians are traied and are practicing ANC protocols
- Primary care teams get the extra training needed and perform good quality antenatal follow-up. They are supervised and consulted by gynecologists.
- Clinical information available to all pregnancy related care givers

- Level II ANC system is adopted and implemented
- Level II ANC is included in basic package of services
- Pregnant women receive relevant health behavior education during antenatal visits
- Most pregnant women receive at least the antenatal visits recommended by the state.

8.4.3.2. Maternity and Neonatal inpatient Facilities

Strategies

- Adopt the stratified model of PN services
- . Encourage the formal adoption of the standards perinatal and neonatal facilities as suggested in USAID (2009) report
- Supply the existing maternity and neonatal units with the equipment as define in the USAID (2009) report.
- Encourage combined facilities each contains a maternity ward or unit and a neonatal unit.
- Encourage new maternity and neonatal units especially these of level II and III to be located within a larger multifunction hospital.
- Educate the public with the advantages of larger maternities
- Encourage all professional to practicing EBM, clinical guidelines and protocols.

Major expected outcomes

- The stratified model of PN services is adopted by the state and the PHIC's
- All maternities have the basic equipment as defined in USAID (2009) report.
- All new neonatal level II and III unites will be built in facilities which contain also a maternity ward.
- All new level II and III units will be built within multi-function hospitals.

- 90% of women deliver in high volume maternities.
- All maternities and neonatal units working with the concept of EBM, clinical guidelines and protocols.

8.4.3.3. A transport System

Strategies

- Encourage the development of ambulance services.
- Set a central control center for all emergency transport services

Major expected outcomes

- Existence of centrally coordinated and well organized ambulance services

8.4.4. Infrastructure

Strategies

- Rebuild or renovate only larger maternity facilities, whether independent or in regional hospitals
- Smaller maternity houses should be allowed only in remote areas and/or special circumstances.
- Level I or II neonatal units should exist in any maternity in to fit the level of the maternity.
- Built one level III neonatal facility in eastern Georgia
- Standardize and equip accordingly all maternities.

Major expected Outcomes

- The stratified model of PN services is adopted and implemented (Table 5)
- Rebuild or renovate level II and level III maternity facilities only, whether independent or in regional hospitals.

- Maternities and neonatal units, put together if possible, located within a multipurpose hospital. Types of maternities and, equipment and locations, are discussed in chapter.
- Small maternities exist only in cases of special circumstances.
- Existence of one level III neonatal facility in eastern Georgia
- Existence of regional, well equipped ambulance services
- All maternities are equipped with adequate standard equipment suitable to their level

8.4.5. Human resources

8.4.5.1. Physicians

Strategies

- A uniform curriculum for basic training for all gynecologists and pediatricians/neonatologists
- Use various training methods including modern ones like distant learning, simulations, computerized training applications etc.
- Train extensively and repeatedly, especially emergency topics and rare acute complications.
- Train physicians to use clinical guidelines and protocols to ensure protocols to standardize clinical activities
- Set measures to encourage movement of physicians to rural and remote areas to practice medicine.
- Primary care physicians/nurses should receive an appropriate training in cases they are the care givers of ANC.
- Establish a CME program for gynecologists and neonatologists.
- Establish strict state supervision on competence examinations, including
- Encourage the participation of the professional associations of gynecologists and neonatologists in the process of improving the quality of physicians' manpower.

- Reorganize the definition of neonatologists in order to enable them to perform all procedures needed to function in the neonatal units and train them to act comprehensively using these procedures
- Update the criteria for certification of residency programs and establish the mechanism for their enforcement.
- Update and improve leading gynecologists and neonatologists in the new technologies and procedures in leading international centers.

Major expected outcomes

- Standardized curricula for all levels of formal training of gynecologists and pediatricians/neonatologists exist.
- Standard use in a variety of training methods.
- On going regular training programs in emergencies and rare complications exist for gynecologists and neonatologists.
- Protocols for ANC, delivery and neonatal care exist and enforced.
- An effective program to encourage gynecologists and neonatologists to practice in rural and remote areas exists and functional.
- Primary care physicians/nurses are trained to use antenatal care protocols in case where they are antenatal care givers.
- CME and OJT programs for gynecologists and neonatologists exist.
- A strict standardized supervision of certifying examinations which are yearly updated and include memory and medical competence subjects.
- The professional associations of gynecologists and neonatologists are actively involved in the on going process of improving the quality of physicians' manpower.
- Neonatologists have the legal permission and professional training to perform any procedure in the neonatal units including NICU's .
- Existing and enforced updated criteria's for residency programs.
- Encourage and if possible support training of leading gynecologists and neonatologists in leading international centers.


8.4.5.2. Nurses

Strategies

- Continue the reform in nursing education by enhancing academization of the profession.
- Offer the academic nurses higher professional responsibility
- Keep some of the non-academic schools for second lower level nurses (practical nurses or nurse assistants) for the simpler and less sophisticated nursing activities.
- Regulate the nursing profession
- Regulate the nursing schools of all levels with a unified curriculum and standards of operation for each level
- Set a legal regulation of the profession through certification and licensing and establish the status of an Academic Registered Nurse (RN)
- Establish a campaign aimed to improve the social status of the profession.
- Set a compulsory period of internship for nurses
- Design and operate a set of certification examinations for all level of nurses
- Set higher level courses for nursing specialties as midwifery, intensive care, dialysis etc.
- Establish OJT Programs to maintain and improve nursing proficiency
- Encourage minority women to choose nursing as a profession.
- Set incentives for high quality nurses to practice in the rural and remote areas.

Major expected Outcomes

- Several Bachelor level programs exist.

- An existing level of academic nurses serving at the higher nursing positions alongside the physicians to practice modern medical and surgical techniques and protocols, and use up to date information technologies.
- Some vocational level nursing school train "practical nurses" who will responsible for the simpler and less sophisticated nursing activities.
- Good quality, updated and regulated profession with standardized certification examinations for all level of nurses
- Nursing is accepted as a career opportunity for young educated middle class women
- Competent midwives and intensive care nurses as well as nurses trained in ANC and normal neonatal care
- Secure OJT for all nurses especially midwives, intensive care, prenatal care and neonatal care nurses.
- Availability of good nursing practice in the rural and remote areas.

8.4.6. Quality

Strategies

- Continually improve the quality of care sector-wide and at all levels of care
- Further develop standards, guidelines and indicators, all based on EBM, for health care services
- Consider Accreditation by an independent national or international organization.
- Increase transparency in the system to enable MoLSHA, PHIC and patient a fair judgment on the quality of services
- Add quality measures to the requirement of the buyers in the system

Major expected outcomes

- Sector wide quality management system established and operational


- Self assessment of doctors and health professionals continuously coordinated and evaluated
- Increased participation of professional associations and interested stakeholders in quality of care improvement
- Active participation of MoLSHA and PHIC in the drive for quality
- Appropriate quality of care standards, national clinical outcome indicators and guidelines approved in conformity with international standards and applied.

8.4.7. Health related Information and information systems

Strategies

- Set PN information systems high in the prioritization list of the field
- Create uniformity in clinical data by establishing a minimal data set (MDS) for PN
- Availability of clinical data to all care givers
- Build a national reporting data set for Perinatology
- Computerize data acquisition and the reporting system
- Create national registries for major PN problems
- Set a comprehensive policy regarding transparency of health related information
- Set a national policy regarding the privacy of health related information
- Advocate the use of Electronic Medical Records (EMR) in PN
- Use IT for training of health care personnel.

Major expected outcomes

- PN information system is set as one of the most important and relevant issue in the improvement of the PN field
- A uniformity of clinical MDS in PN


- PN data available to all clinical caregivers
- A defined data set is reported to regulators and payers
- Computerized data acquisition transfer and reporting system for PN is functional
- National Registries for major PN complications exsist
- Transparency of relevant information to the public.
- Privacy of health information protected by law
- Electronic Medical Records in PN
- Computer based health care training programs are available to all students and professionals.

8.4.8. Special populations

8.4.8.1 Azeri and Armenian minorities

Strategies

- Improve infrastructure and accessibility to health care services
- Encourage minority youngsters to enter health professions
- In the short term, train existing healthcare personnel in their native language/
- Encourage health professionals to practice in the minority regions
- Health promotion programs in native language with contents adapted to native culture

7.8.2.1. Main Expected Outcome

- Infrastructure similar to that in other regions or better
- Minority youngsters graduate both vocational and academic health
- Existing health personnel is being trained in native language
- An adequate number of well trained health professionals
- Minority population is well informed regarding healthy lifestyle and measures to take when pathology is suspected.

8.4.8.2. Inhabitants of small, remote Areas

Strategies

- Adopt and implement the mother and child model for isolated and scarcely populated regions
- Educate the population regarding the best end user utilization of the model
- Promote healthy behavior an healthy life style for remote areas

Main Expected outcomes

- Mother and child model for isolated and remote and scarcely populated regions (ANC by locals + mobile units, hospitals – outside of region, efficient ambulance services).
- Population knows and understands the model and uses it efficiently
- Healthy life style is promoted.

8.5. Prioritization, resource allocation and timing of implementation:

Setting timetables for implementation of a MP is the most difficult task and most challenging since one has to calculate and weigh several variables, each has a different importance, priority, price and chance to materialize. The longer is the period for implementation the less certain are the projections and the final results.

We used the following sources of information to help us understand the consequences of our recommendations: (a) written official and unofficial sources inside and outside Georgia. Especially interesting were time series data which can indicate long term trends; (b) Interviews with the major stake holders of the perinatal and neonatal field including political leaders, professional leaders, professional experts, hospital managers and top professional government officials, health insurance officials, heads of professional associations INGO officials etc.; (c) Field visits to hospitals and ANC facilities, (d) focus groups of Gynecologists and Neonatologists, and (d)


answers to a questionnaire summarizing the recommendations and distributed among several people of the above mentioned groups.

For each of the recommendations we considered its priority, the institutes to take responsibility, the length of time for completion and the suggested year to start it. We took into consideration the resources needed to carry out the projects but we found it too ambitious to put real numbers for such a long term plan. Therefore we preferred to regard it qualitatively and build the implementation plan within the known constraints of the governmental budget. Moreover, the most demanding investment, the renovation of health infrastructure is not very high for perinatology and neonatology since it relates to relatively few inpatient maternal beds and neonatal cribs and also because these resources can be invested in gradually over many years and be shared between the private market, the private health insurance companies and the government. Another, expensive issue is training of professionals which is expected to be financed by INGOs. It is also expected that on the job training of health professionals required mainly for recertification, will be financed by the physicians themselves.

8.5.1. Health Policy

The major issues of health policy regarding or relevant to PN have been discussed earlier, and need not be repeated. On the other hand there is some evidence that the government is making some moves to increase the regulatory enforcement in the health market, to broaden the basic package of services and to take an active regulatory role in the quality of the human resources.

Another important regulatory issue occurring right in front of our eyes with major consequences to the PN field is the gradual transfer of the financial and the operative responsibility of the field to the PHIC's. If this trend continues then the PN field will be the first where financing and clinical responsibility are shared by the same organization which acts as an HMO.

8.5.2. Financing

The tight governmental budget is projected to continue for the foreseeable future and therefore, any recommendation for utilizing public resources will compete with other needs of similar or higher priority. The government should step into expensive investment in the health market only if no other source is available in the free market or from international help of any kind (INGO, direct foreign assistance or fund raising). The recommendations of this chapter were also spread over a long period to ease the yearly financial burden. Projects which were not planned to be financed by the government were omitted from this chapter if mentioned in other parts of the MP.

A summary of the recommendations for financing issues is found in table 8.

Table 8: A Gant type diagram of expected outcomes, assumed responsibility priority and timetable for their implementation for the financial issues of the MP.

No	Recommendation	Responsibility	Priority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	• All level II and III facilities will have adequate equipment in 5 years with 2 milestones	Owners/ Government	1															
2	• Gradual renovation of maternities. To be completed in 10 years. Rate of renovation depends on resource availability	Level II - Owners, Level III - Government	2															
3	• Gradual renovation of neonatal units. To be completed in 10 years. Rate of renovation depends on resource availability	Level II - Owners, Level III - Government	2															
4	• Include level II ANC in pregnancy package in 5 years	Government	1															

List of milestones for recommendations with duration of over 3 years.

No	Recommendations	Mile stone	Duration	Actions
1	Adequate Equipment	1	2 years	Determining cross country equipment needs, characterization, begin equipment acquisition
		2	3 years	Equipment acquisition and installation
2	Renovation of Maternities	1	2 years	Determine cross country renovation needs and setting priorities for ren
		2	8 years	Renovation of the maternities throughout the country depending on the
				of resources (investors ,PHIC's, GoG). Preferably at least 15% per year.
3	Renovation of Neonatal units	1	2 years	Determine cross country renovation needs and set priorities for renovation
		2	8 years	Renovation of the neonatal units throughout the country depending on the
				availability of resources (investors ,PHIC's, GoG). Preferably at least 15% per year.

8.5.3. Organization and delivery of services

8.5.3.1. Antenatal Care

The issues of highest priority in ANC are related to the quality of care which is determined by the basic workforce knowledge and by the working routines. Therefore, the high priority recommendations concentrate on reevaluation of the clinical protocols and if necessary developing modern evidence based clinical guidelines and protocols. The second step is to assure a distribution of

the collected clinical data to all of the care givers. All this requires a very modest financial investment by the stakeholders.

A summary of the recommendations for ANC issues is found in table 9.

Table 9: A Gant type diagram of expected outcomes, assumed responsibility priority, and timetable for their implementation for the ANC organization and the delivery of care issues of the MP

No	Recommendations	Resposibility	Priority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	• Existing ANC protocols, developed through consensus by the professional Association	PA, PHIC's, GoG	1															
2	• Physicians are trained in ANC protocols	INGOs, PHIC's,	1															
3	• Primary care teams get the extra training needed and performing good quality antenatal follow-up.	INGOs, PHIC's,	2															
4	• Clinical information available to all pregnancy related care givers	GoG, PHIC's	1															
5	• Level II ANC system is adopted and implemented	GoG, PHIC's	1															
6	• Level II ANC is included in basic package of services	GoG	2															
7	• Pregnant women receive relevant health behavior education during antenatal visits	INGOs, PHIC's,	2															
8	• Most women receive at least the antenatal follow-up recommended by the state.	GoG, PHIC's	1															

List of milestones for recommendations with duration of over 3 years.

No	Recommendations	Milestone	Duration	Action
3	Primary care for team training	1	up to 15 years, continuous rounds	training 25% of the country teams per year

8.5.3.2. Inpatient Perinatal and Neonatal facilities

The highest priority issue of this section is the adoption of the model which practically abolishes small, underused facilities, limits the number of tertiary care facilities and establishes the system of about 40 level II high volume maternities and neonatal units. These facilities are supposed to be adequately equipped within the first period of the MP, 5 years. On the other hand, major renovation of the buildings can be performed over the whole period of the MP. A summary of the recommendations for Perinatal and Neonatal inpatient care organization and delivery of care issues is found in table 10.

Table 10: A Gant type diagram of expected outcomes, assumed responsibility priority and timetable for their implementation of the Perinatal and Neonatal inpatient care organization and delivery of care issues of the MP

No	Recommendations	Responsibility	Priority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	· The stratified model of PN services is adopted by the state and the PHIC's	GoG, PHIC's,	1	→	→	→												
2	· All maternities have the basic equipment as defined in annex B.	Owners, PHIC's, GoG	1	→	→	→	→	→										
3	· All new neonatal level II and III units will be established in facilities which also contain a maternity ward.	GoG, PHIC's,	1	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
4	· All new level II and III maternities and neonatal units will be built within multi-function hospitals.	GoG, PHIC's,	1	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
5	· 90% of women deliver in high volume maternities.	GoG, PHIC's,	2	→	→	→	→	→	→	→	→	→						
6	· All maternities and neonatal units working with the concept of EBM, clinical guidelines and protocols.	PS, Owners, PHIC's,	2	→	→	→												

List of milestones for recommendations with duration of over 3 years.

No	Recommendations	Milestone	Duration	Actions
2	Equipped maternities	1	2 years	Collect data re equipment needs and characterization, begin equipment acquisition
		2	3 years	Equipment acquisition and installation
3	All new level II and III neonatal units combined with maternities	1	15 years	No milestones are needed
4	All new level II and III maternities and neonatal units within multifunction hospitals	1	15 years	No milestones are needed
5	Women deliver in high volume maternities	1	2 years	a. 50% of woman will deliver in multi profile maternities b. Education of woman to promote delivery in a high volume maternities
		2	2 years	70% of woman deliver in high volume maternities
		3	6 years	90%of woman deliver in high volume maternities

8.5.4. Infrastructure

The physical infrastructure related to the health system is composed mainly of service facilities like hospitals and clinics. Also, some heavy pieces of equipment like central laboratories, linear accelerators, MRI and CT units are also regarded as infrastructure. Most of the issues regarding this type of infrastructure have been already discussed in the previous chapter (8.5.3.). It should be emphasized again that the cost of the infrastructure related to the PN field is relatively inexpensive as compared to the total cost of renovating or rebuilding the all service related health care facilities and, therefore, is within the financial power of Georgia, taking into account that a large part of these resources can be mobilized from non-governmental sources. Public resources are better kept to facilities in areas where services are crucial but may not be profitable and thus not attractive to the private market.

A summary of the recommendations for Infrastructure issues is found in table 11.

Table 11: A Gant type diagram of expected outcomes, assumed responsibility priority and timetable for their implementation of the Infrastructure issues of the MP

	Resposibility	Priority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
▪ Stratifief model is adopted and implemented	GoG, PHICs, Private investors	1															
• Rebuild or renovate level II and Level III maternity facilities only, whether independent or in regional hospitals.	GoG, PHICs, Private investors	1,2															
• Maternities and neonatal units, put together if possible, located within a multipurpose hospital. Types of maternities and, equipment and locations, are discussed in chapter.	GoG, PHICs, Private investors	1,2															
• Small maternities exist only in case special circumstances.	GoG	1															
• Existence of one level III neonatal facility in eastern Georgia	GoG, PHICs, Private investors	3															
• Existence of regional, well equiped ambulance services	GoG, PHICs, Private investors	2															
• All maternities are equipped with adequate standard equipment suitable to their level	GoG, PHICs, Private investors, INGOs	1															

No milestones are required for Table 11

8.5.5. Human resources

Of all the topics of the Implementation Plan, the one related to human resources is the most complicated, time consuming and expensive. The two professions serving the health system are in a deep crisis. On the one hand there is a huge surplus of physicians, but many of them are of poor or at most basic quality while on the other hand the is a chronic shortage of nurses and the professional knowledge of the existing ones is so poor and outdated that they are not capable of fulfilling their task in a modern medicine environment. The problem is way beyond the scope of the PN Master Plan but trying to resolve the issue just for gynecologists, neonatologists, midwives and intensive care nurses may only be of partial success only. All of the recommendations suggested in this document are aimed for the above mentioned professions but they may be part of a general plan to improve the quality of medicine in Georgia. Since primary care physicians and nurses may take on the responsibility for routine ANC they also have to have the appropriate training. Our recommendations can be divided into training of the existentinf professionals and those aimed at improving the quality of future professionals. Professional training is a long and complicated process and the improvement is gradual and sometimes can be observed only after several years. It is also a resources consuming process. Fortunately, several INGOs operating in Georgia are active in training health care professionals. A summary of the recommendations for quality issues is found in tables 12 and 13.

Table 12: A Gant type diagram of expected outcomes, assumed responsibility priority and timetable for their implementation for dealing with Human resources – Physicians' issues of the MP

No'	Recommendations	Resposibility	Priority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	• Standardized curricula for all levels of formal training of gynecologists and pediatricians/neonatologists exist.	PA, Universities, PHICs, GoG	1															
2	• Standard use of a variety of training methods.	INGOs, PHICs	3															
3	• On going regular training programs in emergencies and rare complications exist for gynecologists and neonatologists.	INGOs, PHICs	1															
4	• Protocols for ANC, delivery and neonatal care exist and are enforced.	PA, PHICs, GoG	1															
5	• An effective program to encourage gynecologists and neonatologists to practice in rural and remote areas exists and functions.	GoG, PHIC	2															
6	• Primary care physicians/nurses are trained to implement antenatal care protocols in cases where they are antenatal care providers.	INGOs, PHICs	2															
7	• CME and OJT programs for gynecologists and neonatologists exist and are implemented.	PA,GoG																
8	• Strict standardized supervision of certifying examinations which include both theoretical and medical competence subjects and are updated annually.	PA, GoG	1															
9	• The professional associations of gynecologists and neonatologists are actively involved in the on going process of improving the quality of physicians' manpower.	PA	1															
10	• Neonatologists have the legal permission and professional training to perform any procedures required in the neonatal units and NICU's .	GoG, PA	1															
11	• Updated criteria for residency programs exist and are enforced.	GoG, PA	1															
12	• Encourage and if possible support training of leading gynecologists and neonatologists in leading international centers.	GoG	1															

List of milestones for recommendations with duration of over 3 years.

No	Recommendations	Milestone	Duration	Actions
2	Training methods.	1	2 year	Identify methods of training suitable for Georgia and physicians (Gynecologists, Neonatologists and family physicians in cities and rayon's)
		2	2 years	Training physicians according to the methods determined
3	Training in emergencies and rare complications	1	1 year	Develop training programs in emergencies and rare complications for gynecologists and neonatologists
		2	13 years	Train physicians according to the program once in 3 years
4	Protocols	1	2 years	Writing the protocols
		2	3 years	Implementing and supervision of the clinical work based oe the protocols
5	Encouragement of physicians to practice in rural areas	1	2 years	Develop incentives for physicians to practice in the rural areas
		2	13 years	Implement the programs according to the needs of the maternities in the areas.
6	Training of primary care physicians in use of antenatal care protocols	1	4 years	Train primary care physicians in the routine ANC follow-up and the conditions for referral to higher level of ANC.
		2	to 15 yea	Repeat every 3 years
7	CME and OJT	1	2 years	Develop CME and OJT for all levels of gynecologists and neonatologists
		2	10 years	Implement and review the programs.
8	Certifying examinations	1	2 year	Develop certification examinations for gynecologists and neonatologists.
		2	3 year	execute and review the certifications exemenations
9	Professional associations involvement	1	2 year	Deligate the responsibilty of quality in medicine to the professional associations of gynacologists and neonatologists
		2	12 year	prepare and applyquality indicators for the improvement of medical practice.
12	Training of leading physicians	1	1 year	Identify gynecologists and/or neonatologists suitable for international training. Establish a working relationship with international hospitals.
		2	1 year	Obtain scholarships from national and international organizations and/or establish subsidised loan programs to support international training.
		3	to 8 yea	international tarining

Table 13: A Gant type diagram of expected outcomes, assumed responsibility priority and timetable for their implementation for Human resources – Nurses' issues of the MP

No	Recommendations	Responsibility	Priority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	· Several Bachelor level programs exist.	GoG, Universities	1				→					→						
2	· Placement of academic nurses in key positions	Health facilities owners	1				→											→
3	· Vocational level nursing school train "practical nurses" who will responsible forthe simple unsophisticated nursing activities.	GoG, Vocational schools	1	→									→					
4	· Good quality, updated and regulated profession with standardized certification examinations for all levels of nurses	GoG, Vocational schools	2			→				→								
5	· Nursing is accepted as a career choice for young educated middle class women		2						→							→		
6	· Create and upgrade special high level courses for midwives, antenatal care nurses and intensive care nurses	Universities	2			→												→
7	· Establish OJT programs for all nurses especially midwives, intensive care, antenatal care and neonatal nurses.	GoG, Professional Society	2			→												→
8	· Availability of good nursing practice in the rural and remote areas.	GoG, PHIC's	1					→										→

List of milestones for recommendations with duration of over 3 years.

No	Recommendations	Milestone	Duration	Actions
1	Bachelor programs	1	2 years	Develop characterization and standardization for national nursing bachelor degree
		2	2 years	Opening at least 1 new bachelor program in a different university
		3	2 years	Open at least 1 new bachelor program in a different university, preferably outside of Tbilisi
2	Placing academic nurses	1	2 years	Define and create positions for academic nurses
		2	8 years	Placement of newly trained academic nurses in the upgraded positions
3	Practical nurses	1	2 year	Developing characterization and standardization for national practical nurse training
		2	8 years	Implement the new standardization in the practical nursing vocational schools
4	Regulation or the nursing profession	1	2 year	Establishing regulation committee to determine standards for regulation
		3	3 years	Implementing the regulation
5	Career opportunity	1	2 years	Create a steering a committee for upgrading the status of nurses and to create incentives for young and quality people to enter the profession
		2	2 years	Increase the demand of applicants for the academic programs by 100%
		3	4 years	Increase the demand of applicants for the academic programs by an additional 100%
6	High level courses for midwives, intensive care , ANC nurses	1	2 year	Planning and designing high level courses in the relevant nursing specialties
		2	2 years	Conduct 2 courses for each specialty
		3	2 years	Conduct 2 courses for each specialty
		4	2 years	Conduct 2 courses for each specialty
		5	up to 15 years	Continue training the same rate
7	OJT	1	2 year	Planning and designing a training programs for OJT in the relevant specialties
		2	up to 15 years	Implementing OJT as standard training for practical and academic nurses
8	Good nursing in rural and remote areas	1	2 years	Design OTJ programs for the exisiting nurses in the above specialties
		2	up to 15 years	OJT for relevant professional nurses
		3	2 years	Determine incentives for nurses to practice in the remote areas,
		4	up to 15 years	Execute the incentive programs and provide the rural areas with qualified nurses

8.5.6. Quality

Quality oriented health care services are essential for improved outcomes. However, it is not self propagated but must be continuously pursued by the professionals, organized buyers (GoG and PHIC) and the regulators. The essence of quality is safety, which is achieved only through organized effort like creating a safer physical environment as well as standard working procedures through EBM based clinical guidelines and protocols.

Implementing quality measures are not expensive but require a high degree of commitment by the professionals as well as by the organized buyers and the government.

A summary of the recommendations for quality issues is found in table 14.

Table 14: A Gant type diagram of expected outcomes, assumed responsibility priority and timetable for their implementation for the quality of care issues of the MP

No	Recommendations	Responsibility	Priority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Azeri and Armenian minorities																	
1	• Infrastructure similar to that in other regions or better	GoG,	2															
2	• Minority youngsters graduate from both vocational and academic training programs	GoG, University	1															
3	• Existing health personnel trained in native language	GoG, INGOs	3															
4	• An adequate number of well trained health professionals	GoG	2															
5	Minority population is well informed regarding healthy lifestyle and measures to take when pathology is suspected	GoG	2															
	Remote and scarcely inhabited areas																	
6	• Perinatal and neonatal model for isolated, remote and scarcely populated regions (ANC by locals, hospitals outside of region, efficient ambulance services) is adopted and executed.	GOG, ANC,	1															
7	• Healthy life style is promoted.	ANC, GoG	3															

List of milestones for recommendations with duration of over 3 years.

No	Recommendations	Milestone	Duration	Actions
1	Infrastructure as in other regions	1	14 years	Prioritize infrastructure development in minority regions similarly to other regions
2	Minority youngsters as the health care givers	1	2 years	Establish a program to encourage minority youngsters to enter health care professions
		2	4 years	Medical education tuition assistance for minority populationstudents
3	Training personnel in native language	1	2 years	Prepare minorities language teachers for perinatal and neonatal professionals
		2	3 years	Train existing perinatal and neonatal personel in native language
5	Information regarding healthy lifestyle is well known	1	2 years	Prepare program in health promotion specifically for the minority population
		2	3 years	Implement the program through health personnel and other channels
6	Mother and child model	1	1 year	Adopt neonatal and perinatal model for remote, isolated areas.
		2	9 years	Educate population to use the model.
7	Healthy life style	1	2 years	Prepare program in health promotion specifically for the minority population
		2	3 years	Implement the program through health personnel and other channels

8.5.7. Information and information systems

The highest priority issues, in this section, are those related to the collection and writing down of clinical data, making it available to all care-givers and reporting to the payers and authorities. All these can be achieved using traditional, pen and paper techniques at a very low direct costs. The next step will be the utilization of the internet capacity with the understanding that Internet infrastructure is being and will, in the near future, continue to be highly prioritized as a national project. Therefore, the costs of this stage will include only the basic end level PC's and their basic software. Even as a nationwide project to all health care facilities the costs are acceptable especially when it can be commenced in 2-3 years and spread out over 3-4 years. The costly issue in this section will be to progress to a completely digitalized clinical medical data acquisition and preservation model (electronic medical record=EMR). Therefore, we suggest starting this project in 5-7 years for a subsequent period of 6-8 years

Table 15 Indicates the starting time and the total period needed to implement the strategy and achieve the final goal in the area of Information and Information Technology.

Table 15: A Gant type diagram of expected outcomes, assumed responsibility priority and timetable for their implementation for Information Technology issues.

No	Recommendations	Responsibility	Priority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	· PN information system is set as the one of the most important and relevant issues in the improvement of the PN field	GOG, PHICs	1															
2	· A uniformity of clinical MDS in PN	PA, GOG	1															
3	· PN data is available to all clinical care givers	GOG, PHICs	1															
4	· A defined data set is reported to regulators and payers	GOG, PHICs	1															
5	· Computerized data acquisition transfer and reporting system for PN is functional	GoG	2															
6	· National registries for major complications exists	GOG, PA	3															
7	· Relevant PN information is transparent to the public	GOG, Media	3															
8	· Privacy of health information is protected by law	GOG	2															
9	· Electronic medical records exist in PN	GOG	2															
10	· Computer based health care training programs are available for students and professionals	INGOs, GOG, Universities	2															

List of milestones for recommendations with duration of over 3 years.

	Recommendations	Milestone	Duration	Actions
7	Information Transparency to the public	1	1 years	Defining reports to be available to the public
		2	3 years	Publish reports
8	Privacy of health information	1	2 years	Enact relevant regulation
		2	2 years	Implementation
9	Electronic Medical Records	1	3 years	Design the electronic medical records
		3	7 years	Implementation
10	Computerized health care training programs	1	2 years	Develop/adapt computerized training applications for students and professionals
		2	2 years	Implementation

8.5.8. Special populations

Implementing the Master Plan recommendations for special populations is a more difficult process than doing so in other issues and locations. This results from the facts that these populations are lagging behind in many facets. However, since their health outcomes are so bad the extra effort to improve it is inevitable.

It is worth while mentioning that our recommendations for the two special populations differ conceptually. For the ethnic minority in southern Georgia we recommend to improve PN through measures similar to those in other parts of the country with some modifications and higher investments.

For the inhabitants of the remote and isolated regions in northern Georgia we suggest the provision of basic primary health services. supplemented by an effective transportation to facilities out of the regions for any needed higher levels of ambulatory ANC and inpatient facilities.

A summary of the recommendations for quality issues is found in table 16.

Table 16: A Gant type diagram of expected outcomes, assumed responsibility priority and timetable for their implementation for Special population issues

No	Recommendations	Responsibility	Priority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Azeri and Armenian minorities																	
1	• Infrastructure similar to that in other regions or better	GoG,	2															
2	• Minority youngsters graduate both vocational and academic health	GoG, University	1															
3	• Existing health personnel trained in native language	GoG, INGOs	3															
4	• An adequate number of well trained health professionals	GoG	2															
5	Minority population is well informed regarding healthy lifestyle and measures to take when pathology is suspected	GoG	2															
	Remote and scarcely inhabited areas																	
6	• perinatal and neonatal model for isolated, remote and scarcely populated regions (ANC by locals, hospitals outside of region, efficient ambulance services) is adopted and executed.	GOG, ANC,	1															
7	• Healthy life style is promoted.	ANC, GoG	3															

List of milestones for recommendations with duration of over 3 years.

No	Recommendations	Milestone	Duration	Actions
1	Infrastructure as in other regions	1	14 years	Prioritize infrastructure in minority regions similarly to other regions in the country
2	Minority youngsters as the health care givers	1	2 years	Set a program to encourage minorities youngsters to enter health care professions
		2	4 years	medical education tuition assistance for minority populations students
3	Training personnel in native language	1	2 years	prepare minorities language trainers for perinatal and neonatal professionals
		2	3 years	train existing perinatal and neonatal in native language
5	the information regarding healthy lifestyle is well known	1	2 years	prepare program in health promotion for the minority population
		2	3 years	implement the program thro health personnel and other channels
6	Mother and child model	1	1 year	adopt neonatal and perinatal model for remote, isolated areas.
		2	9 years	educate population to use the model.
7	Healthy life style	1	2 years	prepare program in health promotion for the minority population
		2	3 years	implement the program thro health personnel and other channels

References

AAP Committee on Fetus and Newborn (2004) Levels of Neonatal Care, Pediatrics 114; 1341-1347

Blondel B, Papiernik E, Delmas D, et al (2009) the Mosaic Research Group. Organization of obstetric services for very preterm births in Europe: results from the MOSAIC project. BJOG 116:1364–1372

Chkhatarashvi K, Chikovani I, Asatiani T (2006) Assessment of Perinatal Care in Georgia. Report Prepared by Curation International Consulting with the support of UNICEF

Chanturidze T., Ugulava T., Duran A, Richardson E. (2009) Georgia: Health system review Health Systems in Transition 11(8): 1–114.

Diversity GE website accessed from the internet 27.10.2010 http://www.diversity.ge/eng/map.php

Economy Watch web site accessed from the Internet 28.1.2011 http://www.economywatch.com/economic-statistics/Georgia/GDP_Per_Capita_Current_Prices_US_Dollars/year-2015/

Georgian Presidential decree №639 (2005) ”On the development of the National Concept and Action Plan for Tolerance and Civil Integration”

Johnson K.A., Little G.A. (1999) State Health Agencies and Quality Improvement in Perinatal Care, Pediatrics 103; e233-247.

National Center for disease control and public health (2009) Health and health care statistical year book, Georgia 2008). Ministry of Labour, Health and Social Affairs of Georgia.

Ministry of Labor, Health and Social Affairs (2009), Health and health care, Statistical yearbook, Georgia 2008.

Neto MT (2006) Perinatal care in Portugal: Effects of 15 years of a regionalized system. Acta Pædiatrica; 95: 1349_1352

Snimek (2007) The health of children in the Czech Republic. http://ec.europa.eu/**health**/ph_information/.../wp/.../ev_20071120_co22_en.pdf Retrieved from the internet on 17.7.10

Suhrcke M, Rocco L, McKee M (2007) Health: a vital investment for economic development in Eastern Europe and central Asia. European Observatory on Health Systems and Policies.

USAID (2009) Concept of Perinatal System Strengthening in Georgia, USAID USAID and CoReform.

WHO Regional Office for Europe (2009). European Health for All Database (HFA-DB). Copenhagen, WHO Regional Office for Europe.

WHO (2010) Increasing access to health workers in remote and rural areas through improved retention. Retrieved from the internet at http://whqlibdoc.who.int/publications/2010/9789241564014_eng.pdf on July 10, 2010.


World Bank (2009). World Development Indicators [online database], retrieved from the internet http://go.worldbank.org/IW6ZUUHUZ0 on 7 July 2010)


Annex A

List and details of all the maternity houses and departments in Georgia, as collected by SMC request presented in 2010.

Region	#	Title	Location	Independent entity or Integrated	Distance to the nearest maternity	Distance to the nearest City	#of obstetric beds	# of delivery rooms	#of Delivery/Surgery Wards	# of Neonatal beds	Deliveries a year	# of C/sections	# of Obstetritians/neonatologists	Midwives
Mtsketa-Mtianeti	1	Mtskheta Maternity Department	Mtskheta	Integared in the Mtskheta Multiprofile Hospital	20km/10-15 minutes to drive to Tbilisi	20km/10-15 minutes to drive to Tbilisi	10	N/A	1	Mother/Child together	356	90	4 obstetritians/5 neonatologists	5
	2	Jinvali Maternity Department	Jinvali	Integared in the Jinvali Multiprofile Hospital	35km/30minutes to drive to Dusheti	50km/40-50minutes to drive to Tbilisi	5	N/A	1	Mother/Child together	21	not doing, reffering to Tbilisi	4obstetritians/1 neonatologists	4
	3	Dusheti Ob./Gyn. Department	Dusheti	Integared in the Khazbegi Hospital	30km/40minutes to Mtskheta	50km/60minutes to drive to Tbilisi	7	N/A	1	Mother/Child together	84	17	3 obstetritians/1 neonatologists	5

	4	Khazbegi Ob./Gyn. Department	Khazbegi	Integared in the Dusheti Hospital	140km/2,5-3 hours to Mtskheta, mostly isolated in winter due to weather conditions	160km/3,5 hours to drive to Tbilisi	3	N/A	1	Mother/Child together	12	not doing, reffering to Tbilisi	1 obstetritians /1 neonatologists	1
	5	Tianeti Ob./Gyn. Department	Tianeti	Integared in the Tianeti Medical Centre	60km/1,45 minutes to Mtskheta (roads are very bad)	75km/2 hours to drive to Tbilisi	5	N/A	1	Mother/Child together	54	2	2 obstetritians /1 neonatologists	5
	6	Akhalgori Ob./Gyn. Department	Akhalgori (conflict zone)	Integared in the Akhalgori Multiprofile Hospital	32km/35 minutes to Mtskheta	60km to Tbilisi	5	N/A	1	Mother/Child together	0 - after conflict	N/A	2 obstetritians /1 neonatologists	5
Samtske-Javakheti Region	**1**	LTD Aspindza's Regional Hospital Policlinic-ambulatory union	Aspindza # 58 Vardzia street	Integrated into the regional hospital	23 km from the nearest maternity house of Akhalstikhe	32 km from Akhalstikhe	10	1	no	10	47 (4 high risk deliveries)	0	1 (no operator); -- neonatologist'	3 (all of them work in delivery ward)

	2	Borjomi Maternity House	# 2 Vashlovani street, Borjomi	Independent entity	50 km from (No Suggestions) maternity house	38 km from Khashuri	20	1	1	20 (1 ward for high risk neonates)	456	76	8 (3 operators; 1 - obstetricians of women consultation)	6 (all of then work in delivery ward)
	3	Obstetrics - gynecologist department of the Akhaltsikhe regional hospital	# 105/1 Rustaveli street; Akhaltsikhe	Integrated into the hospital	30 - 30 km from Adigeni and Aspindza maternity houses	50 km from Borjomi	18	1	no separate ward	together with mothers	755 (151 high risk deliveries)	99	7 obstetricians, 3 neonatologists	10 (all of them work in delivery ward)
	4	LTD Adigeni Maternity House "Meani"	# 17 Artem Balakhashvili street, Adigeni	Independent	30 km from Alhaltsikhe Maternity House	57 km from Borjomi	10	1	1 Delivery ward. They use the surgery ward of the hospital;	1	70 (22 high risk deliveries)	0	1 obstetrician; 1- therapeutist; 1 neonatologist	6 (4 work in delivery ward)

	5	Obstetrics - gynecologist Department of the hospital	# 48 Tavisupleba street, Ninotsminda	Integrated into the hospital	20 km from Akhaltsikhe maternity house	20 km from Akhaltsikhe	15	1	0	3	278(31 high risk deliveries)	10	3 obstetrician; no operator;	4 - All of them work in delivery ward; 4 nurses of neonates.
	6	Obstetrics Department of LTD Akhalkalaki hospital - policlinic union	Akhalkalaki	Integrated into the hospital	18 km from Ninotsminda maternity department	72 km from Akhaltsikhe	30	9	2	30	800	35	7 obstetrics of the maternity department. 5 gynecologists of the women consultation. 2 neonatologists.	8 midwives of the obstetrics dep. (all of them work in the delivery ward); 6 neonatal nurses. 12 nurses; 5 midwives of the consultation

Shida Qartli	**1**	LTD "Ginika +" - private maternity house, Kaspi	Kaspi, # 4 Tsulukidze street	Independent	2 km from Kaspi Obstetrics-gynecological department of the hospital	30 km from Gori	4	1 delivery ward	1 surgery ward	4 separate beds	272	127	5 obstetricians; 2 operators; 1 neonatologists;	4-all of them work in wards
	2	Obstetrics - gynecologist Department of the hospital, Kaspi	Kaspi Stalini street # 110	Integrated in the district hospital	40 km from Gori maternity house	40 km Gori	8 (6 obstetrics and 2 gynecology)	1	1	No separate wards for neonates	242	70	7 (3 operators)	5 (4 work in delivery ward)
	3	JSCo "Iavnana" - maternal and child center, Gori	Gori, # 104 Chavchavadze street	Separate	25 km from Kareli Maternity house	Tbilisi - 90 km	28	4 individual delivery wards	1	No separate wards for neonates	1751	318 - 18 %	13 - 4 operators; 6 neonatologist;	5

	4	Obstetrics - gynecologist Department of the rayon hospital, Kareli	N 4 Rustaveli street. The rayon hospital is located at # 30 Panaskertеli street; Kareli.	Integrated - the department was established in May 2010;	1 km from Kareli Maternity house	30 km from Gori	10 (7 obstetrics; 3 gynecologists)	1	1	No separate wards for neonates	400	84 0 21 %	5 (3 operators); 2 neonatologists.	4 - all of them work in delivery ward
	5	LTD Khashuri Maternity House	# 38 Rustaveli street, Khashuri	Seperate	30 - 30 km from Kareli and Borjomi maternity houses	50 km from Gori	10 - obstetrics, 5 - gynecologist	1	1 - Separate	10	626	74 - 14 %	10 obstetricians; 4- operators; 4 neonatologists	11 (10 work in delivery ward; 1 - head of the team);
Ajara	**1**	Kobuleti Maternity House	# 26 Maternity House	Seperate	25 km from Batumi maternity house	25 km from Batumi	13	1	1	-	516	97	13; out of 13 10 obstetricians; 2 operators, 1 anesthesiologist 2 neonatologists;	6

	2	Qeda Rayon hospital	Daba Qeda, # 9 Tamar Mepe street	Integrated	Shuakhevi - 25 km	43 km to Batumi	10	1	1	-	52	2	2 obstetricians - 2 are operators. 1 anesthesiologist; 1 neonatologist	4
	3	Shuakhevi District hospital	Daba Shuakhevi; # 2 Tamar Mepe street.	Integrated	18 km to Khulo	18 km to Batumi	10	1	1	-	176	36	2 out of which one is operator; 1 neonatologist	5
	4	Khulo District hospital	Daba Khulo, # 3 Agmashenebeli street	Integrated	18 km to Shuakhevi maternity	84 km to Batumi	10	1	1	-	344	26	4 obstetricians out of which 2 are operators; 1 neonatologist	5
	5	Batumi Maternity House	Batumi, # 39 Rustaveli street	Separate	3 km from maternal and child health care center	25 km from Kobuleti	65	7	3	1 (second phase; no resuscitation ward.	3335	1 311	50 0bstetritians (out of which 30 are operators); 11 neonatologists;	40

	6	Betumi Maternal and child health care center	Batumi, Angisi settlements	Separate	3 km from Batumi maternity house	25 km from Kobuleti	22	2	3 (+ 2 beds?)	1 (second phase)	1 242	362	12 out of which 5 are operators	17 neonatologists - 5 of obstetrician department; 2 resuscitation department.
	7	Health Center "Medina"	Batumi, 3 18 Ninoshvili street	Separate	3 km from Batumi maternity house	25 km from Kobuleti	8; 35 new beds	3	12 operation block - out of this 1- obstetrician	12 equipment of resuscitation; 6 beds - second stage;	434	218	5 -4 of which are operators; 1 neonatologist	16
Imereti	**1**	JSC - Sachkere district hospital-policlinic department	Sachkere; # 17 Gomarteli street	Integrated	170 km to Tbilisi; 95 km to Kutaisi	95 km to Kutaise	20 obstetrics/gyn beds	2			977	26%	4 obstetricians; 4 neonatologists	5 midwives
	2	Hospital "BEAUMONDE" Ltd	Kutaisi, # 15 Gamsakhurdia	Separate	1 km to nearest maternity house of		18	2	2		951	203	12 obstetricians; 9 neonatologi	6

		Georgia	street		Kutaisi								sts	
	3	JSC - Sachkere district hospital-policlinic departme nt	Sachkere; # 17 Gomarteli street	Integrate d	170 km to Tbilisi; 95 km to Kutaisi	95 km to Kutaise	20 obstetric s/gyn beds	2			977	26%	4 obstetrician s; 4 neonatologi sts	5 midwives
	4	Hospital "BEAUM ONDE" Ltd Georgia	Kutaisi, # 15 Gamsakh urdia street	Separat e	1 km to nearest maternity house of Kutaisi		18	2	2		951	203	12 obstetrician s; 9 neonatologi sts	6
	5	Tskaltubo Maternity house	# 68 Chavchav adze street, Tskaltubo	Separat e	12 km from Kutaisi maternity house	12 km from Kutaisi		2	1	—	106	78	4 obstetrician s; 1 neonatologi st	3
	6	Khoni LTD "Janmrtel oba" - District hospital	# 19 Solomon more street, Khoni	Integrate d	30 km from Kutaisi Maternity house	30 km from Kutaisi, 260 km from Tbilisi	5	1	1	---	26	3	1 obstetrician; 1 neonatologi st;	4

	7	Municipal Obstetric Gynecological Hospital Ltd.c0, Kutaisi	# 11 Lortikipanidze street, Kutaisi	Separate	2.5 km from Kutaisi # 2 maternity house		24 (20 obstetrics, 4 - high risk pregnancy	2	2	--	2008	625	14 obstetricians; 6 neonatologists;	8
	8	LTD "Mulityprofile District Hospital", Tkibuli	# 57 Tkvarcheli street, Tkibuli	Integrated	35 km from Ambrolarui district hospital	70 km from Kutaisi	7	2	1	__	150	34	5 obstetricians, 1 neonatologist;	4
	9	LTD Maternal and Child health care district center "Momavali", Samtredia	# 66 Respublica street, Samtredia	Separate	12 km form Abasha hospital	30 km from Kutaisi,	25 (15 for obstetrics, 5 for gynecological, 5 for high risk pregnancy	1	1	_	168	64	8 obstetricians; 3 neonatologists	4

	0	LTD "Kharagauli Hospital"	# 14 Tsereteli street, Kharagauli	Integrated	25 km from Zestaphoni maternity house		5		1	—	41 physiological deliveries; 27 - pathological deliveries	0	1 obstetritian; 1 neonatologist;	4
	11	LTD "Bagdadi Medical Center"	# 84 Kakhiani street, Bagdadi	integrated	28 km from Kutaisi maternity,	28 km from Kutaisi	8	1	1	-	34 deliveries (26 physiological, 2-high risk deliveries	6	5 obstetricians; 1 neonatologists;	5
	12	SC Terjola Hospital by Academician Petre Shotadze	# 69 Rustaveli street, Terjola	Integrated	22 km form Zestaphoni maternity house	40 km from Kutaisi	8	2	1	-	200 (8 out of which is high risk deliveries)	37	5 obstetricians out of which 1 works in women consultation / ; 2 neonatologists	15

	13	Kutaisi Maternity house # 2;	#11 Javakhishvili street, Kutaisi	Separate	Around 1 km from Kutaisi maternal and child diagnostic center		40	2	2	--	987	315	11 obstetricians; 5 neonatologists; 3 anesthesiologists;	5
	14	Kutaisi Regional Mothers and Children's Medical-Diagnostic Center	Javakhishvili street 85, Kutaisi	Integrated	15 km from Kutaisi # 2 maternity house		15	2	1	--	1981	35%	21 obstetricians (11 in women consultation. 10 in obstetrician. Department); 8 neonatologists;	29
	15	LTS "Zestaphoni Maternity House"	# 142 Uznadze street, Zestaphoni	Separate	18 km from Terjola and 30 km from Kharagauli		35	2	2	15	852	147	12 obstetricians; 4 neonatologists;	5 (all of them work in the delivery block
	16	LTD "Chiatura Maternity House"	# 90 Stalin street, Chiatura	Separate	Sachkere maternity house - 10 km	70 km from Kutaisi	33	2	2	--	404	67	9 obstetricians; 5 neonatologists;	5

Samegrelo	1	Multiprofile Hospital "Respublica", Zugdidi	# 206 Gamsakhurdia street, Zugdidi		2 km from Zugdidi central hospital	103 km from Kutaisi	34	4	1	2 (together with mothers)	647	293	18 obstetricians (4 operators); 8 neonatologists	5
	2	Zugdidi Central Hospital	# 30 Kostava street	Integrated	2 km from the hospital "Respublica"	105 km from Kutaisis	15	2	1	neonates are with mothers	168	108	11 obstetricians (4 operators); 6 neonatologist;	5
	3	Maternal and Child Center, Khobi	# 3 (No Suggestions) street; Khobi	Separate	15 km from Senaki maternity	75 km from Kutaisi	30	1	1	neonates are with mothers	123	30	6 obstetricians out of which 2 are operators. 1 neonatologist	5
	4	Senaki maternity house	# 108 Rustaveli street, Senaki	Separate	3 km from maternity house "Meramedi"	67 km from Kutaisi	30	2	2	neonates are with mothers	298	194	8 obstetricians out of which 2 are operators. 2 neonatologist; 2 anesthesiologists.	5

	5	Senaki maternity house "Meramedi"	Senaki	Separate	3 km from Senaki maternity house	67 km from Kutaisi	24	1	1	neonates are with mothers	793	550	6 obstetricians out of which 2 are operators. 4 neonatologist	4
	6	Abasha central hospital	# 141 Tavisupleba street, Abasha	Integrated	14 km from maternity house "Meramedi"	46 km from Kutaisi	20	1	1	20	51	11	7 obstetricians out of which 1 are operators. 1 neonatologist	4
	7	Martvili maternity house	# 111 Mshvidoba street, Martvili	Separate	34 km from Maternity house "Meramedi"	43 km from Kutaisi	10	1	1	neonates are with mothers	156	67	4 obstetricians out of which 1 are operators. 4 neonatologist	5
	8	Ckhorotsku maternity house	# 11 Kostava street	Separate	28 km from the multiprofile hospital "Respublica" Zugdidi	97 km from Kutaisi	11	1	1	9	158	63	5 obstetricians out of which 2 are operators.2 neonatologist; 1 anesthesiologist	5

	9	Tsalenjikha Central Hospital	# 14 Khurgulia street, Tsalenjikha	Integrated	25 km from the multiprofile hospital "Respublica" Zugdidi	124 km from Kutaisi	5	1	1	5	63	5	3 obstetricians out of which 2 are operators.1 neonatologist;	4
	10	Jvari Hospital "Engurhesi"	# 27 Stalini street, Jvari	Integrated	30 km from the multiprofile hospital "Respublica" Zugdidi	35 km from Kutaisi	10	1	1	10	261	41	4 obstetricians out of which 2 are operators.1 neonatologist;	5
	11	Poti maternity house	# 3 Mikaberidze street, Poti	Separate	38 km from Maternity house "Meramedi"	98 km from Kutaisi	40	3	2	neonates are with mothers	305	65	10 obstetricians out of which 6 are operators.4 neonatologist; 2 anesthesiologist	4

Guria	1	SC "Ozurgeti Maternity House"	# 4 Jgenti street, Ozurgeti	Separate	28 km to Chokhatauri	50 km to Batumi	30 (10 gynecological beds				790	142	10 obstetricians; 9 work in obstetrician. Department and 4 in women consultation. Out of 9 3 are operators; 9 neonatologists	7
	2	SC "Lanchkuti Medical Center after Chachava" - obstetrics/ gynecological departme nt	# 21 Chanturia street	Integrated	40 km to Chokhatauri maternity	43 km to Poti, 65 km to Kutaisi.	15	1 with two birthing beds	1		235	35	5 obstetricians (operator comes from Chokhatauri; 1 neonatologist	5
	3	LTD "Chokhatauri Hospital - policlinic Departme	# 22 Dumbadze street	Integrated	28 km to Ozurgeti	60 km to Kutaisi	15 (5 gynecological beds)	1	1	--	189	46	2 obstetricians (one operator); 1 neonatologists	5

		nt".												
	4	Dr. M Sharashidze medical Center, Tbilisi	# 255 Tsotne Dadiani Street, Tbilisi	Integrated	5 km from # 5maternity house; 7 km from the referral center		81 (69 obstetrics, 2-emergency)	6	1	—	3355	471 (14 %)	13 obstetricians; 7 neonatologists;	12
Racha - Lechkumi	1	Ambrolauri Regional Hospital	Ambrolauri	Integrated	The distance between Ambrolauri and Tsageri is around 55 km	Ambrolarui - Tkibuli - 43 km	10	3		10	37		1 neonatologist;	5
	2	Lentekhi treatement - diagnostic union	Lentekhi	Integrated	26 km to Tsageri		7	1		7	12		1 neonatologist;	1
	3	Oni Regional Hospital	Oni	Integrated	28 km to Ambrolauri		10	1		10	28		1 neonatologist;	1
	4	Tsageri Regional Hospital	Tsageri	Integrated	28 km from Tsageri to Lentekhi	55 km from Tsageri to Kutaisi	10	1		10	15		1 neonatologist;	1

Tbilisi	1	Scientific-research institute of perinatology and obstetrics/ gynecology after Chachava, Tbilisi	# 38 Kostava street	Separate	500 meter from the nearest maternity; 10 km from the referral clinic - Gudushauri clinic		46; (4 intensive neonatologist, 6 intensive obstetrics)	2 (block - wards - 4)	1	—	2541	683	57 obstetricians (10 work in policlinic); 11 neonatologists	8
	2	Tbilisi # 1 Maternity house						3						
	3	Tbilisi # 2 Maternity House						?	4					
	4	Tbilisi #3 Maternity House					70 obstetrics beds. 15 for high risk deliveries; 20 gynecological			7				

	5	Tbilisi # 4 Maternity House									2489 (794 with complicated delivery)	758	13 neonatologists; 27 obstetricians;	14 midwives (9 work in delivery room)
	6	Tbilisi # 5 Maternity House	Tbilisi	Independent entity			18			18	995	223 (22 %)	35 obstetricians; 15 neonatologists (including neuropathologist)	38 midwives (6 work in delivery room)
	7	Ltd Sharashidze Medical Centre	Tbilisi	Independent entity	5km to Maternity House #6	7km to Gudushauri Centre	69+2 intensive care	N/A	6+4	Mother/Child together	3355	471	15 obstetricians/7 neonatologists	12
	8	Ltd Tbilisi Maternity House#2	Tbilisi	Independent entity	Chachava institute	8-10km to Gudushauri Centre			3	Mother/Child together	1178	343	38/13	6
	9	Institute of perinatal medicine and ob./gyn after Academic	Tbilisi	Independent entity	500m Patriarchy MH	10km to Gudushauri	46	4	2+1	Mother/Child together	2541	683	47/11	8

		ian Chachava												
Qvemo Qartli	1	Ltd Marneuli Maternity House	112 Rustaveli street Marneuli	independent	4 maternity House, Tbilisi - 30km	50km to Gudushauri	2	2	1	M/CH together	1045	8	8 obstetritians ; 2 operators, 3 neonatologists	6
	2	Ltd Tetritskharo Maternity House	5 Parnavazi street, Tetritskharo	independent	27km tu Marneuli	55 km to #4 Maternity, Tbilisi	2	2	1	M/CH together	104	19	5 obstetritians ; 3 operators, 1 neonatologists	4
	3	Rustavi Maternity House	3 Tsminnda Nino street, Tustavi	independent	30 km to #4 Maternity, Tbilisi	55km to Gudushauri	35	2	3	25/3incubators	1975	927	16 obstetritians ; 2 operators, 8 neonatologists	12
	4	Ltd Gardabani Maternity House	27 Agmashenebeli street, Gardabani	independent	12km tu Rustavi	57km to Gudushauri	15	1	1	2	453	52	5 obstetritians ; 3 operators, 4 neonatologists	5

	5	Ltd Bolnisi Maternity House	25 Agmashenebeli street	independent	22km to Marneuli	70km to Gudushauri	12	2	2	M/CH together	760	127	8 obstetritians; 3 operators, 2 neonatologists	6
	6	Ltd Tsalka Maternity House	tsalka	integrated in the multiprofile hospital		110km to Gudushauri	10	1	1	M/CH together	135	0	1 obstetritians; 1 neonatologists	2
Kakheti	1	Ltd Sikharuli	#6 Aladashvili street, Telavi	Integrated	0,005km	150km to Tbilisi, 2,5h	10	1	2 - Separate	m/ch together	97 (started 3 months ago)	31	10 obstetricians; 4 neonatologists	4
	2	Avtandil Khambarashvili Clinic	#6 Aladashvili street, Telavi	independent	0,005km	150km to Tbilisi, 2,5h	15	3	3 - Separate	3 intencive care	995	497	9 obstetricians; 3- operators; 3 neonatologists	5
	3	Ltd Lagodekhi rayon public health maternity house	1 Janelidze street, Lagodekhi	integrated	40km	160km/3,5 hours to drive to Tbilisi	15	1	1	4 intencive care	556	79	7 obstetricians; 2- operators; 2 neonatologists	5

	4	Sagarejo rayon hospital ob/gyn unit	Kakheti highway 13, Sagarejo	integrated	45	55	15	3	2	m/ch together	465	25	7 obstetricians; 1-operators; 4 neonatologists	5
	5	Akhmeta Maternity House	1 Rustaveli street, 1nd turn, Akhmeta	independent	35	200	15	2	1	m/ch together	421	76	9 obstetricians; 2-operators; 3 neonatologists	4
	6	Gurjaani Maternity House	1 Kostava street, Gurjaani	independent	40 km to Telavi	130	15	2	2	5	423	118	10 obstetricians; 2 neonatologists	21
	7	Ltd Khvareli MCH Centre	16 Agmashenebeli street, Khvareli	independent	27	170	15	6	1	m/ch together	299	12	8 obstetricians; 2-operators; 2 neonatologists	5
	8	Dedoplistskharo Hospital, Maternity Unit	49 Nikortsikhe street, Dedoplistkharo	integrated	30kn to Tsnori	140	10	2	2	m/ch together	224	35	4 obstetricians; 1-operators; 1 neonatologists	4

	9	Ltd Hera	Signagi, Sakhobo, 65 Agmashenebeli street	independent	1	120	3	1	1	m/ch together	launched in 2010	0	2 obstetricians; 1 neonatologists	3
	10	Ltd Demetrashvili	65 Agmashenebeli street, Tsnori	independent	2	140	6	1	1	m/ch together	168	50	3 obstetricians; 2-operators; 2 neonatologists	4


Annex B

Standards for Maternities and Neonatal units by Level of care

O – Optional
E - Essential

	STANDARD I. OBSTETRICAL UNIT CAPABILITIES	II Maternity	II Neonatal	III Maternity	III Neonatal
		E		E	
1.1.	The hospital must demonstrate its capability of providing uncomplicated and complicated obstetrical care				
	a) unexpected obstetrical care problems;	E		E	
	b) fetal monitoring, including internal scalp electrode monitoring;	E		E	
	c) initiating a cesarean delivery within 30 minutes of the decision to deliver;	E		E	
1.2.	The hospital must be capable of providing critical care services appropriate for obstetrical patients, as demonstrated by having a critical care unit and a board-certified critical care specialist as an active member of the medical staff.			E	
1.3.	The hospital must have appropriate agreements for initiating maternal transports to an appropriate level.	E		E	
1.4.	The hospital will have a volume of at least 1,000 deliveries per year	E		E	

	STANDARD II. NEONATAL UNIT CAPABILITIES	II Maternity	II Neonatal	III Maternity	III Neonatal
2.1.	The hospital must demonstrate its capability of providing uncomplicated and complicated neonatal care		E		E
	a) resuscitation and stabilization of unexpected neonatal problems		E		E
	b) selection and management of neonatal patients at a neonatal risk level appropriate to its capability.		E		E
	STANDARD III. OBSTETRIC PERSONNEL	II Maternity	II Neonatal	III Maternity	III Neonatal
	LEADERSHIP				
3.1.	A certified Obstetrician/Gynecologist with at least 5 years experience in obstetrics including surgical dexterity and experience in performance of Cesarean hysterectomy and other obstetrical operative procedures shall be a member of the medical staff and have responsibility for obstetrical services.	E		E	
	COVERAGE FOR URGENT OBSTETRICAL ISSUES				
3.2.	A specialist in Obstetrics and Gynecology or a qualified resident in Obstetrics and Gynecology shall be present in-house 24 hours a day and readily available to the delivery area when a patient is in active labor.	E		E	
3.3.	A physician or nurse-midwife shall be present at all deliveries.	E		E	


	STANDARD IV. PEDIATRIC PERSONNEL	II Maternity	II Neonatal	III Maternity	III Neonatal
	LEADERSHIP				
4.1.	A certified Neonatologist will be a member of the medical staff and have full-time responsibility for neonatal special care or intensive care unit services.		E		E
	COVERAGE FOR URGENT NEONATAL ISSUES	II Maternity	II Neonatal	III Maternity	III Neonatal
4.2.	Neonatal Resuscitation Program (NRP) trained professional(s) with experience in acute care of the depressed newborn and skilled in neonatal endotracheal intubation and resuscitation shall be immediately available to the delivery and neonatal units.		E		E
4.3.	A physician with pediatric training shall be present in-house 24 hours a day and assigned to the delivery area and neonatal units and not shared with other uts in the hospital.		E		E
4.4.	A Neonatologist shall be available to be present in-house within 30 minutes.		E		E
	NEONATAL SUBSPECIALTY CARE				
4.5.	The hospital shall have written pediatric cardiology and pediatric surgery consultation and referral agreements in place.		E		E

4.6.	The hospital shall have on staff an ophthalmologist with experience in neonatal retinal examination and a written consulting relationship with pediatric cardiologist(s) and pediatric surgeon(s).		O		E
4.7.	The hospital shall have the following pediatric specialists on staff, in active practice and, if needed, in-house urgently: cardiology, neurology, and genetics b) The hospital shall have pediatric general surgeon(s), and the following pediatric specialists on staff, in active practice and, if needed, in-house urgently: hematology, endocrinology, pulmonary, gastrointestinal, nephrology.				E
	STANDARD V. OTHER PERSONNEL	II Maternity	II Neonatal	III Maternity	III Neonatal
5.1.	An anesthesiologist shall be available in house 24h a day so that any procedure requiring anesthesia may be initiated within 30 minutes of the decision to initiate. The anesthesiologist must be experienced in the performance of spinal epidural and general anaesthesia and in the performance of intubation, ventilation and resuscitation	E	E	E	E
5.2.	If the hospital performs neonatal surgery, then an anesthesiologist with experience in neonatal anesthesia shall be present in all neonatal surgeries.				E
5.3.	The hospital shall have obstetric and neonatal diagnostic imaging available 24 hours a day, with interpretation by physicians with experience in maternal and/or neonatal disease and its complications.	E	O	E	E
5.4.	The hospital shall have a registered dietician or other health care professional with	O	O	O	E

	knowledge of and experience in adult and neonatal parenteral/enteral nutrition				
5.5.	The hospital shall have personnel with demonstrated competencies and protocols for lactation support.	E	E	E	E
5.6.	The hospital perinatal program shall have a medical social worker experienced in perinatal services on staff.	E	E	E	E
5.7.	The hospital shall have genetic diagnostic and counseling services or written consultation and referral agreements in place.	E	E	E	E
5.8.	The hospital shall have a pediatric neurodevelopment follow-up program or written referral arrangements for neurodevelopment follow-up	O	O	O	E
	STANDARD VI. LABORATORY	II Maternity	II Neonatal	III Maternity	III Neonatal
6.1.	The laboratory must have the capability of reporting:				
	a) hematocrit, serum glucose, and blood gas within 45minutes	E	E	E	E
	b) complete blood count, micro blood chemistries, liver functions tests, blood type and match, Coombs test, bacterial smear results, and coagulation studies (prothrombin time or PT, partial thromboplastin time or PTT, fibrinogen) within 1 hour , Bilirubin for neonates	E	E	E	E
	c) bacterial culture results within 48 hours, with antibiotic sensitivities to follow	E	E	E	E
	d) serum magnesium within 1 hour	E	E	E	E

	e) urine electrolytes within 6 hours	E	E	E	E
	g) special amniotic fluid tests (e.g., lecithin-sphingomyelin or L/S ratio, phosphatidylglycerol or PG) within 12 hours			E	
	h) Group B streptococcus, hepatitis B surface antigen, RPR/VDRL, HIV, gonorrhea and Chlamydia maternal test results available before patient discharge	E		E	E
	before patient discharge				
6.2.	Blood bank technicians shall be present in-house 24 hours a day.	E	E	E	E
6.3.	The hospital must have either referral arrangements or onsite capability for molecular, cytogenetic, and biochemical genetic testing available.	O	O	O	E
	STANDARD VII. DIAGNOSTIC IMAGING CAPABILITIES	II Maternity	II Neonatal	III Maternity	III Neonatal
7.1.	Portable obstetric ultrasound equipment must be present in the delivery area.	O		E	
7.2.	Mobile X-ray equipment must be available to the neonatal units.		O		E
7.3.	Portable head ultrasound for newborns must be available to the neonatal units.				E
7.4.	Computerized tomography (CT) capability must be available on campus.			O	O
7.5.	Neonatal echocardiography equipment and experienced technician must be available on campus as needed with interpretation by pediatric cardiologist.				E
	STANDARD VIII. EQUIPMENT	II Maternity	II Neonatal	III Maternity	III Neonatal
8.1.	The maternity must have all of the following equipment: a) O2 analyzer,	E		E	

	stethoscope, intravenous infusion pumps b) radiant heated bed in delivery room c) oxygen hood with humidity d) bag and masks capable of delivering up to 100% oxygen e) orotracheal tubes f) aspiration equipment g) laryngoscope h) cardiac monitor i) pulse oxymeter j) cardioversion/defibrillation capability for mothers k) resuscitation equipment for mothers and neonates l) individual oxygen, air, and suction outlets for mothers m) emergency call system				
8.2.	The Neonatal unit must have all of the following equipment and supplies: a) O2 analyzer, stethoscope, intravenous infusion pumps b) infant incubators according to the number of intermediate care beds c) oxygen hood with humidity d) bag and masks capable of delivering up to 100% oxygen to the infant e) orotracheal tubes f) aspiration equipment g) laryngoscope h) umbilical vessel catheters and insertion tray i) cardiac monitor j) pulse oxymeter k) phototherapy unit l) Doppler blood pressure for neonates m) ECG n) resuscitation equipment for neonates o) individual oxygen, air, and suction outlets for neonates p) Air oxygen blender, Baby scale. A minimum of ONE radiant heated bed and ONE ventilator must be available for infant stabilization in each unit		E		
8.3.	The Neonatal unit must have all of the following equipment and supplies: a) O2 analyzer, stethoscope, intravenous infusion pumps b) radiant heated beds, closed incubators and ventilators available in the neonatal units according to the number of intensive care and intermediate care beds c) oxygen hood with humidity d) bag and masks capable of delivering up to 100% oxygen to the infant e) orotracheal tubes f) aspiration equipment g) laryngoscope h) umbilical vessel catheters and insertion tray i) cardiac monitor j) pulse oxymeter k) phototherapy unit l) Doppler blood pressure for neonates m) ECG n) resuscitation equipment for neonates o) individual oxygen, air, and suction outlets for neonates p) Air oxygen blender, Baby scale				E

8.4.	The hospital shall have a neonatal intensive care unit bed set up and equipment available at all times for an emergency admission.		O		E
85.	The hospital shall have fetal diagnostic testing and monitoring equipment for: a) non-stress and stress testing b) ultrasound examinations c) amniocentesis	E		E	
86.	The hospital must have neonatal intravascular blood pressure monitors.				E
8.7.	The hospital must have laser coagulation capability for retinopathy of prematurity.				E
8.8.	The hospital must have appropriate equipment (including back-up equipment) for neonatal respiratory care as well as protocols for the use and maintenance of the equipment as required by its defined level status.		E		E
8.9.	The hospital must be capable of providing advanced ventilatory support for neonates of all birth weights.				E
	STANDARD IX. MEDICATIONS				
9.1.	Emergency medications, as listed in the *Neonatal Resuscitation Program* must be	E	E	E	E

	present in the delivery area and neonatal units.				
9.2.	Antibiotics, anticonvulsants, (surfactant, prostaglandin E1) and other emergency cardiovascular drugs must be immediately available to the neonatal units				E
9.3.	All emergency resuscitation medications to initiate and maintain resuscitation, in accordance with Advanced Cardiac Life Support (ACLS) guidelines, must be present in the delivery area.	E	E	E	E
9.4.	The following medications must be in the delivery area or immediately available to the delivery area: a) oxytocin (b) Methergine c) Prostin/15M) d). cytotec. Labetolol IV and IM, Hydralazine IV, Nifedipine, Magnesium, Dexamethazone	E		E	
	STANDARD X. EDUCATION PROGRAMS	II Maternity	II Neonatal	III Maternity	III Neonatal
10.1.	The hospital shall provide continuing education programs for physicians, nurses, and allied health personnel on staff concerning the treatment and care of obstetrical and neonatal patients.	E	E	E	E
10.2.	A hospital that accepts maternal or neonatal primary transports shall provide continuing education programs for referring hospitals.			E	E
	STANDARD XI. PERFORMANCE IMPROVEMENT	II Maternity	II Neonatal	III Maternity	III Neonatal
11.1.	The hospital shall conduct internal perinatal case reviews which include all maternal, fetal, and neonatal deaths, as well as all maternal and neonatal transports.	E	E	E	E

11.2.	The hospital shall participate in the collaborative collection and assessment of data with MoLHSA and any other required regulatory office for the purpose of improving perinatal health outcomes.	E	E	E	E
	STANDARD XII. POLICIES AND PROTOCOLS	II Maternity	II Neonatal	III Maternity	III Neonatal
12.1.	The hospital must have written policies and protocols for the initial stabilization and continuing care of all obstetrical and neonatal patients appropriate to the level of care rendered at its facility.	E	E	E	E
12.2.	The hospital must have maternal and neonatal resuscitation protocols.	E	E	E	E
12.3.	The hospital shall have written guidelines for accepting or transferring mothers or neonates as “back transports” including criteria for accepting the patient and patient information on required care.	E	E	E	
12.4.	The hospital shall have a licensed neonatal transport service or written agreement with a licensed neonatal transport service.	E	E	E	