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Research note on Maternal Mortality in the Kyrgyz Republic

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ABSTRACT

Kyrgyzstan, like other UN member countries, made commitments to achieve the Millennium Development Goals, including MDG 5 "Improve Maternal Health". Maternal mortality in the KR is unstable and has virtually no reduction. Moreover, according to the international estimates (UN agencies, 2010) maternal mortality data in the KR are higher than the official government statistics. The main objective of this research was to investigate the reasons for the differences in maternal mortality data from various sources, review the results of major National programs' implementation related to maternal health and factors that have a negative impact on the quality of services for pregnant women, especially in antenatal period. The review of the current situation in Kyrgyzstan indicates that there are many factors that have an adverse effect on maternal health: socio-economic factors (migration, low living standards, unemployment, lack of social benefits and influence of cultural peculiarities) and barriers in health care system (lack of financing, shortage of medical staff at PHC, lack of transport, equipment and its maintenance, etc.). To accelerate progress on MDG 5 "Improve Maternal health", it is necessary to develop a comprehensive and coordinated approach involving all partners and stakeholders through strengthening of inter-sectoral collaboration.

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ABBREVIATIONS

ANC	Antenatal Care
BP	Blood Pressure
CBA	Clinical Blood Analysis
CQIS	Continuous Quality Improvement System
EPC	Effective Perinatal Care
FAP	Feldsher - midwifery post
FGP	Family Group Practice
FMC	Family medicine centre
GTZ	German Office for Technical Cooperation
HPU	Health Promotion Unit
IHE	Institution of Higher Education
KfW	German Development Bank
KR	Kyrgyz Republic
KSMIR&CE	Kyrgyz State Medical Institute of Retraining and Continuous Education
MDGs	Millennium Development Goals
MHI	Mandatory Health Insurance
MHI ADP	MHI Additional Drug Program
MHIF	Mandatory Health Insurance Fund
MoH	Ministry of Health
MMR	Maternal Mortality Ratio
NSC	National Statistics Committee
OMH	Oblast Merged Hospital
PHC	Primary Health Care
RMIC	Republican Medical Information Center
SGBP	State Guaranteed Benefit Package
STI	Sexually Transmitted Infections
TH	Territorial Hospital
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
USE	Ultrasound Examination
VHC	Village Health Committees
WB	World Bank
WHO	World Health Organization

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EXECUTIVE SUMMARY

Kyrgyzstan, like other UN member countries, made commitments to achieve the Millennium Development Goals, including MDG 5 "Improve Maternal Health". The results of the latest international estimate of maternal mortality (2010), carried out by UN agencies (the Maternal Mortality Estimation Inter-Agency Group (MMEIG), comprising of WHO, UNICEF, UNFPA, the United Nations Population division, and the World Bank, together with a team at the University of California at Berkeley, USA), show that, during 1990 – 2010 period, the number of maternal deaths decreased by 47% globally and some countries have made significant progress in this area. However, the average annual rate of reduction in the maternal mortality ratio (MMR) after 1990 made 3.1% instead of the required 5.5%, and by 2015, MDG 5 will probably not be achieved at the global level. According to the results presented for Kyrgyzstan, estimates of maternal mortality data are higher than the official government/public statistics; the trend of MMR is unstable and has virtually no reduction (average annual rate of MMR reduction has comprised 0.2%).

The main objective of this research was to investigate the reasons for the differences in maternal mortality data from various sources, review the results of major National programs' implementation related to maternal health and factors that have a negative impact on the quality of services for pregnant women, especially in antenatal period.

The problem of completeness and quality of the current state/public records of deaths by cause of deaths still persists in the country, including registration and recording of maternal mortality. In these circumstances, to obtain the data, which would reflect the picture in the country in a more reliable way and enable comparability of data at international level, various methods of collecting data on MM are applied (MICS - «sisterhood method", MMEIG - method of statistical modeling using available data from different sources – state/public statistics, population census data, findings and results of evaluation studies, etc.), which explains the differences in indicators from various sources (Chapter 4). Starting from 2009, the country has consistently started implementing a number of measures to ensure improvement of the reliability of statistical data on MM in the Kyrgyz Republic. However, obstacles and barriers still exist, e.g. not a complete moratorium on punishment of health workers for MM cases registration; the situation improvement requires intensification of inter-agency cooperation; lack of monitoring of MM cases registration in non-profile departments and hospitals, which entertains the possibility of under-registration or incorrect coding of MM cases; population is not motivated to register MM cases for various reasons; in addition, low quality of postmortem (pathological anatomic) examination due to underdeveloped material and technical base and lack of qualified pathologists in the country present serious obstacle to detecting the exact causes of MM.

Overview of health programs (National health care reforms programs, State benefits programs and programs on protection of maternal health) indicates high priority of maternal health at the state level (Chapter 5). Shortage of financial resources in health care system, both from the state budget and international donor organizations conditioned low coverage and fragmented implementation of the planned activities, as well as lack of capital investments in health care system infrastructure for a long time.

Evaluation of quality of antenatal care was performed through the review of patient cards of pregnant women, interview of women (parturient and postpartum) and health workers at primary health care (PHC) level (Chapter 6).

In recent years, much has been done to revise clinical practice on women's care during pregnancy and delivery and training of medical personnel. The overview of pregnant women's patient cards at PHC level has shown general compliance with the main recommendations, given in the revised Clinical protocol on antenatal care (early registration of pregnant women for medical care, monitoring of arterial blood pressure, level of proteinuria and blood hemoglobin, waving interventions with unproven efficacy, etc.). The areas requiring immediate improvement include promotion of use of Gravidogram in pregnancy management, higher quality counseling and informing pregnant women on the key aspects of pregnancy and upcoming deliveries through individual consultations and "Schools of mothers", improved treatment of anemia in pregnant women, further expansion of partnership delivery and encouraging women to participate in decision-making process regarding delivery and postpartum period.

The interview of women has indicated that one of the most important factors, determining and influencing their perception of services quality is above all, professional level of medical staff. Some respondents gave critical comments on competence of health professionals at PHC level. For this reason, many of them had to seek medical services from Rayon/district or Oblast/regional centers. Besides, despite the fact that the Government guarantees free care during pregnancy and delivery, financial barriers to health services still persist (laboratory tests and analyses, and purchase of antianemic drugs to a great extend).

The main objective of PHC medical staff interview was to identify factors, impeding improvement of antenatal care quality. The vast majority of respondents indicated primarily socio-economic factors (migration, low living standards, unemployment, and lack of social benefits and influence of cultural peculiarities). The second group of reasons included barriers in health care system (low level of staffing of primary health care facilities, poor physical infrastructure and low competence of laboratory service staff, shortage of resources for proper functioning of "Schools of mothers," etc.).

To identify barriers to further improvement of quality of services for women during deliveries, health staff at the hospital level was interviewed (Chapter 7). Denoting the significant progress that has been made in recent years in implementation of the "Effective Perinatal Care" Program, the interviewed specialists admitted that a lot still needs to be done in terms of Obstetrics and Gynecology. And if at PHC level, a significant proportion of barriers falls on the factors that lie beyond health sector (socio-economic conditions), then at hospital level, the barriers were mostly associated with more systemic reasons. Moreover, the barriers, overcoming of which requires sufficient financial investments both in infrastructure (need of additional space, lack of equipment and its maintenance, lack of transport, equipping of Oblast centers to implement the regionalization principle), and in training of health personnel (ensuring inflow of young specialists, maintaining of continuous medical education and skills upgrading).

Thus, review of the current situation in Kyrgyzstan indicates that there are many factors that have an adverse effect on maternal health. To accelerate progress on MDG 5 "Improve Maternal health", it is necessary to develop a comprehensive and coordinated approach involving all partners and stakeholders through strengthening of inter-sectoral collaboration.

CHAPTER 1. INTRODUCTION

1.1. MDG5 in Kyrgyzstan

In September 2000, UN member-countries including Kyrgyzstan adopted the Millennium Declaration that indicated development goals topical for all countries and focused on problem-solving in the area of human rights, environment etc. These goals have set quantitatively specified checkpoints that have to be achieved by 2015 (values for 1990 were taken as basic). Overall international formulations of MDG and their objectives have been adapted taken into account the available specifics and existing conditions in each concrete country.

"Improve Maternal Health" (MDG 5) is one of eight MDGs adopted by international community at the UN Millennium Summit in 2000. For Kyrgyzstan MDG 5 target was formulated as follows: "reduce the maternal mortality ratio by three quarters between 1990 and 2015". Progress in trends of achievement of this goal was characterized with such indicators[1] as:

- Maternal mortality ratio;
- Proportion of births attended by qualified staff; and
- Proportion of pregnant women with anemia.

Progress in relation to MDG achievement is tracked at the international level. Assessments conducted testify that with only few years remaining, most of the countries, including Kyrgyzstan, is unlikely to achieve the reduction in maternal mortality as stated in MDGs. The average lifetime risk of maternal death for CEE and CIS countries is 1 in 1300 as compared to Kyrgyzstan where it is 1 in 480. While over the past decade there has been visible progress achieved in reducing mortality among children under 5 years of age, maternal mortality has largely been stagnant over this period. Perhaps even more importantly, there are large disparities within the country where in some of the poorest regions (oblasts) there is evidence of an increase in MMR[2]. Improvement in maternal health has remained a key challenge to the Kyrgyz health system. With a visible improvement of the financial protection, access and use of health services, more needs to be done to achieve a sustained in impact indicators in maternal health[3].

Despite of relatively high commitments to maternal health issues in the country and investments made by international organizations in maternity health improvements, maternity mortality ratio in Kyrgyzstan is still high. During the last years there were changes in definitions and data collection methods in order to achieve better reporting on MMR, what partially are explained trends in MMR. But there were evidences that situation is getting worse. Maternal mortality ratio (MMR) is a particularly sensitive indicator for performance of the wider health system - as improvements in this area are reliant on so many different aspects of the system working well (for example, educated staff, quality obstetric care, accessibility of facilities, literacy, etc.).

[1] Report on implementation of Millennium Declaration development goals, Bishkek, 2003;

[2] The World Bank. Operationalizing the Millennium Development Goals in Central Asia. Washington DC: The World Bank; 2005. Retrieved April 17, 2009 from http://www.worldbank.org/reference/;

[3] Evaluation of National Health Reform Program, MoH of the KR, 2011.

1.2. Main Determinants of Maternal Health

This Section gives an overview of the main maternal mortality determinants in the Kyrgyz Republic.

1.2.1. Social-Economic and Demographic Situation

Kyrgyzstan is one of the poorest countries in the world with a limited industrial base and high external debt. In 2011, more than one third of the population lived beyond the absolute poverty line (Table 1). Persistence of high level of poverty is partly due to economic changes that followed the collapse of the former Soviet Union. Results show that the poverty rate in 2011, calculated based on consumer spending, made 36.8 percent nationwide, and has increased by 3.1 percentage points versus the previous year. 2 million 43.6 thousand people lived below the poverty line in 2011, of which nearly 70 percent were residents of rural areas.

Table 1. Poverty level, KR, by regions (in % of total population)

Region	1996	2000	2003	2009	2010	2011
KR	**43,5**	**52**	**40,8**	**31,7**	**33,7**	**36,8**
Batken	-	69	44	31,5	33,6	35,6
Jalalabad	43,8	67,9	51,7	36,9	44,7	45,3
Issyk-Kul	53,7	60,9	38,9	46,1	38	29,5
Naryn	60,7	81,4	65	44,1	53,5	49,9
Osh	51,6	51,6	49	38,3	41,9	44,7
Talas	55,8	72,7	59,1	33	42,3	50,2
Chui	32,3	28,1	17,1	21,2	21,9	28,6

Source: *NSC; Cost value of general poverty line in 2011 made 25849 Soms a year per capita, extreme poverty line– 16089 Soms*.

In the past five years outflow of the population from the country has increased (Table 2), the highest external migration curves were observed in 2007 and 2010 (50.6 thousand people); people migrated mostly to Russia, Kazakhstan and other counties. Internal movements of population within the country continue to be directed towards Bishkek and Chui Oblast, while other regions continue to lose population, especially Naryn Oblast. The employment rate of the population has a tendency towards further decrease (from 60.1% in 2006 down to 58.6% in 2010).

Table 2. Migration and employment of population

	2006	2007	2008	2009	2010
Number of emigrants, thous.people Migration growth, outflow (-)	-31,0	-50,6	-37,8	-29,6	-50,6
Number of immigrants, thous.people Migration growth, outflow (-)	1,5	0,1	-0,5	-0,4	-2,1
Net number of migrants (total), thous.people Migration growth, outflow (-)	-29,5	-50,5	-38,3	-30,0	-52,7
Share of the employed in the total population, in %	60,1	59,8	60,0	59,0	58,6

Source: NSC

Since early 2000s, a steady growth of birth rate has been marked in the country (Table 3) due to an increase in the number of young people who were born in 1980s - 90s. Also total fertility rate has increased from 2.7 in 2006 to 3.1 in 2010-11. In 2010, the highest birth rate was observed in Naryn and Talas Oblasts (3.9 children per one woman of childbearing age on average), i.e. in the poorest areas in terms of socio-economic conditions. Percentage of contraceptives use also is steadily declining.

Table 3. Some demographic indicators, KR

	2005	2006	2007	2008	2009	2010	2011
Crude birth rate**	-	23,1	23,4	23,9	25,2	26,8	27,1
Birth rate among teenagers of 15-17 yrs old (per 1000 women of relevant age group)*							
KR	4,46	4,43	4,65	4,64	5,23	5,99	-
Urban areas	4,65	5,07	7,80	5,35	6,01	7,36	-
Rural areas	4,38	4,13	4,58	4,31	4,88	5,40	-
Total fertility rate (per woman) **	2,5	2,7	2,8	2,8	2,9	3,1	3,1
Contraceptive prevalence rate (% of women 15-49) **	38,2	39,4	35,9	33,0	31,2	30,1	28,9

Source: ***** *- NSC, ** - RMIC*

Thanks to the targeted and systematic work on mass coverage/screening of schoolchildren to ensure education accessibility to all population categories in Kyrgyzstan, the country managed to maintain high level of literacy rate at the 15 + age group, and 15-24 age group (Table 4).

Table 4. Literacy rate in the age group of 15-24 years

	2005	2006	2007	2008	2009	2010
KR	**99,54**	**99,54**	**99,54**	**99,54**	**99,75**	**99,75**
Boys	99,47	99,47	99,47	99,47	99,70	99,7
Girls	99,61	99,61	99,61	99,61	99,80	99,8
Urban areas	99,85	99,85	99,85	99,85	99,87	99,87
Rural areas	99,61	99,61	99,61	99,61	99,68	99,68

Source: NSC

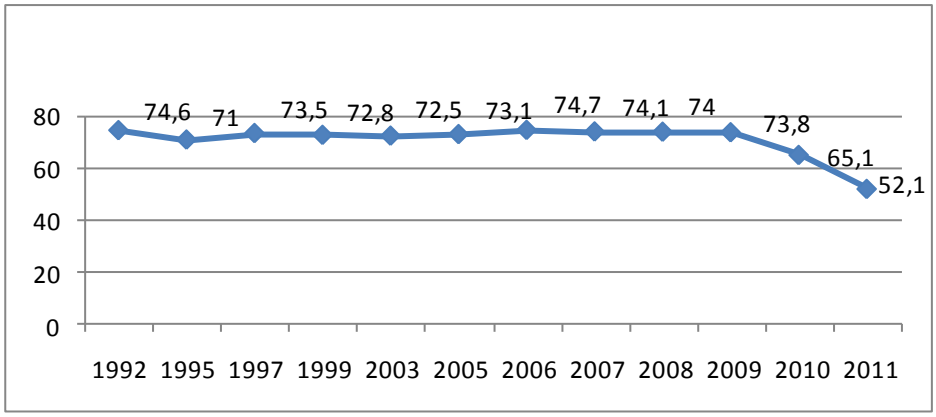
However, high index of literacy does not always imply equally high level of functional literacy. According to the results of selective social surveys, conducted by various associations, foundations, centers (usually non-governmental), functional literacy among population was steadily declining in the Kyrgyz Republic during the last ten years (for example, based on 2009 study[4]). Today, apart from the ability to read and write, it is necessary to understand the written text (for example, laws, regulations), which immediately increases the statistical indicators of the number of functionally literate people, turning into a risk factor, endangering decrease of access to education for children, whose parents are not socially and economically adapted in society. In this regard, work on reforming the system of adult education is carried out in Kyrgyzstan, the main directions of which are stipulated in the Concept of adult education development and other government policy/strategic documents.

[4] We study for life: what pupils know and able to do. PISA 2009. The results of international comparative study of functional literacy among 15year old students//Report of the Center for Assessment in Education and Teaching Methods. - B:2011.-230 p.

1.2.2. Services on maternal health protection

Coverage of population with maternal health protection services in Kyrgyzstan is traditionally high. However, review of indicators of early registration of pregnant women before 12 weeks nationwide during 1992 – 2011 period indicated its marked decline over the last two years (Figure 1). According to 2011 data, this happened mainly due to the situation in Bishkek City, Chui, Talas and Jalalabad Oblasts, and less due to situation in Naryn Oblast. The share of deliveries attended by skilled health personnel makes 98,3-98,5% on average (Table 5).

Figure 1. Number of pregnant women, who got registered with a HCO for pregnancy follow up before 12 weeks of pregnancy, KR, in %



Source: RMIC

Table 5. MDGs5 indicators in the KR, in %

	2005	2006	2007	2008	2009	2010	2011
Proportion of birth attended by qualified staff*	97,9	98,4	98,4	98,5	98,5	98,3	-
Proportion of pregnant women with anemia **	33,0	50,4	36,0	54	39,5	36,1	46,9

Source: ***** - *NSC; ** - RMIC*

As for prevalence of anemia among pregnant women, its level remains high, with additional periodic rises. The figures got increased in 2011again and reached 46.9%.

1.2.3. Political Situation

In recent years, Kyrgyzstan undergoes a period of significant political changes, and despite the continuous efforts of the state to sustain economic activity, energy security and fight against corruption in the country, the political situation remains unstable. The country has survived two revolutions (2005, 2010), which were accompanied by conflicts in the civilian population, and other consequences (economic recession, unemployment rise, poverty, social unrest, increased migration). As a result of reforms, Kyrgyzstan currently is country with a parliamentary form of governance. Political events, especially those, which took place in the south of the country in June 2010, clearly had a negative impact on the health status of mother and child[5]. Results of rapid assessment, conducted by WHO, UNFPA and UNICEF[6] in July 2010, indicated that the

[5] Kyrgyz Republic: Second Report on Progress of MDGs implementation. Second edition (amended and revised). Bishkek,2010.
[6] First joint rapid assessment of health and nutrition of population in the south of the country, Osh and Jalalabad Oblasts, 29 June–3 July, 2010, WHO, UNFPA and UNICEF.

conflicts period was marked by increased number of home deliveries, deterioration of access to essential health services and constraints on the availability of basic food products. With that, as noted in the above report, deterioration of access was attributed to the fear of people to seek healthcare from health care organizations, blocking roads, lack of public transport.

Thus, review of data on selected key indicators shows instability of the overall situation in the country. The poor state of economy, lack of jobs and, as a consequence, high level of internal and external migration mutually reinforce a negative effect on all aspects of society's life in general, and the state of maternal health in particular. The political events of 2005 and 2010 served as an additional destabilizing factor, which was reflected in deterioration of basic indicators (poverty, employment, etc.). Under these conditions, birth rate and fertility rate are generally increasing, and use of contraception is steadily decreasing. Herewith, early registration of pregnant women for medical follow up has significantly reduced, and vice versa, such MDG indicator as proportion of pregnant women with anemia, is growing. The alarming situation is formed with functional literacy.

CHAPTER 2. RESEARCH GOAL AND OBJECTIVES

The research is aimed at analysis of the maternal mortality trends and determinants in the KR
Research objectives:

1. Explore statistics (official and evaluative) on maternal mortality in the KR: information sources, methodology, figures, trends

Research questions:
- what is the reason for difference in data from different sources?
- how has the quality of data collection changed?

2. Review of national programs oriented at maternal health

Research questions:
- what key interventions on maternal health improvement are outlined in current national programs?
- in what areas the outcomes are the most successful and why?
- in what areas the progress is poor and why?

3. Evaluate Antenatal Care delivered by health organizations at rayon and oblast levels

Research questions:

- what changes have happened in health care organizations at PHC and hospital levels delivered care for pregnant women during last years (equipment, laboratory services, emergency care services, HR availability etc.)?

- evaluation of activities undertaken within the frames of ANC;

Key guiding question:

(1) What is the current evidence on quality of care for ANC?
(2) What are the gaps in quality and what are the barriers to delivering the full package of ANC, approved in Clinical Protocol[7]?
(3) what barriers are available to get services in the framework of the SBP and Additional MHI Drug Package at outpatient level?

[7] Clinical Protocols on Obstetrics-Gynecology for primary, secondary and tertiary health care levels, 2009.

CHAPTER 3. METHODOLOGY

Step 1 Desk – Review

1) Review of statistical data (Republican Health Information Center, National Statistical Committee, MICS, etc.);
2) Analysis of the secondary sources of information (reports, evaluations, etc.);

Step 2. Developing and piloting research instruments

The study combined qualitative and quantitative methods of data collection. The following instruments were used for this study (Table 6).

Table 6. Brief description of the study instruments

Instrument	Comments
Semi-structured interviews with pregnant and newly delivered women	Questionnaire has focused on perceived quality of care during ANC and delivery.
Patient cards survey	Information received has allowed evaluating (i) compliance of antenatal observation practice to the approved Clinical Protocol as well as (ii) quality and completeness of information contained in Individual Card of a pregnant woman.
Semi-structured interviews with stakeholders at national level from governmental, nongovernmental and international organizations	Obtaining of experts' opinion on trends and their reasons on the issues of mother's health, maternity mortality and data quality on this indicator in the country and effectiveness of implemented programs.
Semi-structured interviews with stakeholders at regional level with health facility managers and service providers	Obtaining of opinions on the situation in places, strengths and weaknesses in organizing care for pregnant women, barriers for effective implementation of the acting programs and maternity mortality data quality.

Step 3. Field work

Description of the sample

- ***Selection of the regions.*** Considering a range of criteria, including steadily high indicators of maternal mortality and where negative trends were observed amongst all regions of Kyrgyzstan (Table 7) three regions and two rayons per each region have been selected for the study:

- Osh oblast – Aravan and Uzgen rayons;
- Talas oblast – Talas and Bakai-Ata rayons, and
- Chui oblast – Sokuluk and Kemin rayons.

Table 7. Brief description of sampled regions

Criteria	Region		
	Osh	**Talas**	**Chui**
MMR	high	One of the highest	high
MMR trends	stable	negative	negative
population	high density	Low	high density
migration	high level	Low	high level
socio-economic status	middle	most poor	most rich

- ***Health Organizations.*** Total number of organizations – 17, out of them at the oblast level – 2 FMCs, 2 Oblast Merged Hospitals and Chui Oblast Maternity House, at the rayon level – 6 FMCs and 6 THs;

- ***Patient cards survey.*** In total 223 Individual Cards of pregnant women were surveyed in the sampled organizations;

Data on quantity of interviews are presented in the Table 8 below.

Table 8. Data on quantity of the conducted interviews

	Survey tools	**Quantity of interviews**
1	Semi-structured interviews with pregnant and newly delivered women	**Total – 57**
2	Semi-structured interviews with stakeholders at national level from governmental, nongovernmental and international organizations	**Total – 16**
3	Semi-structured interviews with stakeholders at regional level with health facility managers and service providers	**Total – 37**

CHAPTER 4. MATERNAL MORTALITY DATA IN THE KYRGYZ REPUBLIC

Maternal mortality is one of the components of the crude/general mortality rate or coefficient. As maternal deaths are relatively rare events, it has no significant impact on the demographic situation in general, but serves as one of the main characteristics for evaluation of organization of obstetric/maternal services in the country.

WHO defines maternal death as "…the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes»[8]. This definition enables to detect maternal deaths, both directly and indirectly related to obstetric causes.

The following indicators are used for maternal mortality estimation[9]:

- **Maternal mortality ratio –** Number of *maternal deaths* during a given time period *per 100 000 live births* during the same time-period;
- **Maternal mortality rate** – Number of *maternal deaths* in a given period *per 100 000 women of reproductive age* during the same time-period;
- **Adult lifetime risk of maternal death –** The probability that a *15-year-old women* will die eventually from *maternal cause*; and
- **The proportion of maternal deaths among deaths of women of reproductive age (PM) –** The number of *maternal deaths* in a given time period divided by the total deaths *among women aged 15-49 years.*

This section describes the trends of maternal mortality ratio in the Kyrgyz Republic (KR) on the basis of different data sources, and actions to improve the quality of statistics in health care organizations (HCO) of the country.

4.1 Description of various estimates

Data on maternal mortality is collected in the country both in a routine way and under various evaluation surveys and studies (Table 9).

[8] International Statistical Classification of Diseases and Problems, related to health, X edition, 1992 (ICD-10)
[9] Trends in Maternal Mortality: 1990 to 2010. Estimates developed by WHO, UNICEF, UNFPA and The World Bank. World Health Organization 2012.Maternal mortality in 2005 : estimates developed by WHO, UNICEF, UNFPA, and the World Bank.

Table 9. Maternal Mortality Ratio in the KR (per 100 000 live births)

Data Source	1990	1995	1997	2000	2005	2006	2007	2008	2009	2010	2011
Republican Medical Information Center	63	67,4	76,4	46,5	61	53	62,5	58,9	75,3	50,6	47,5
National Statistics Committee	62,9	44,3	62,7	45,5	60,1	55,5	51,9	55,0	63,5	51,3	54,8
WHO/EURO[1]	62,9	67,3	76,4	46,5	61	55,5	62,5	58,9	82,8	50,6	-
WHO, UNICEF and UNFPA				110							
WHO, UNICEF, UNFPA and WB, 2005					150[2]						
WHO, UNICEF, UNFPA and WB, 2008	77	98		81	78			81			
WHO, UNICEF, UNFPA and WB, 2010	73	98		82	77					71	
MICS						104					

Source: [1] – "Health for All" European database, January 2012; [2] – Data is obtained through statistical modeling

Republican Medical Information Center (RMIC) of the Ministry of Health. The main source of routine data on maternal mortality in the country is the Republican Medical Information Center (RMIC). Registration of maternal deaths in RMIC is made based on a death certificate. Health organizations at all levels of medical care in the case of maternal death are filled in the appropriate recording and reporting forms, namely "Signal death certificate for pregnant women and parturient and post-partum women" (Form № 102-1 / y), "Data on maternal mortality" (Reporting form № 21), and other medical documentation (Annex 1). All information is promptly transmitted to the level of the Ministry of Health (hereinafter MOH) and the National Center for Maternal and Child Health Promotion, as well as Oblast Medical Information Center (OMIC) and RMIC.

National Statistical Committee (NSC). The NSC figures differ from that of the RMIC (higher or lower) for the following reasons:

- Accounting for maternal deaths is carried out only on the basis of official death registration with the ZAGS (Civil Records Office) bodies (i.e., availability of death certificate only is not enough.) As the responsibility for registration of death with ZAGS bodies is directly laid upon the population, there are cases of late registration. For example, according to the NSC 2010 data, of the total number of all registered deaths in the country (from all causes), 983 cases, or 2.7% have been registered with delay of 1-10 years or more;
- If the maternal death occurred a few years ago, but was registered with ZAGS in the current year, this case will be reflected in the NSC statistics in the current year;
- NSC statistics also take into account maternal mortality cases in penitentiary system, whereas the RMIC data reflects the situation only in the civil sector.

WHO/EURO. As it can be seen from the data, WHO/EURO figures are based on the data of routine public/state statistics (mainly RMIC).

WHO Studies. Since 1996, WHO jointly with other international organizations has funded efforts to get estimates of maternal mortality (MM) for all countries of the world. The corresponding calculations were published for 1990, 1995, 2000 (WHO, UNICEF and UNFPA)

and 2005, 2008, 2010 (WHO, UNICEF, UNFPA and WB). The WHO studies use various types of data sources to obtain data that are comparable across countries.

The best source of information for measuring MM is the system of current civil registration and recording of deaths by causes of death (in the post-Soviet countries, this system was related to registration of acts of civil status). But to date, such system exists only in the developed countries and in some developing countries (Group A - total of 65 countries). Most of developing countries (Group B - 89 countries) use different *indirect* methods, depending on available data to estimate MM. Calculation of MM indicators might be based on data from population censuses, selective household surveys, interviews of respondents about the fate of their siblings, verbal autopsies (verbal investigations of deaths of women who died outside health care institution). Also the so-called Reproductive-age mortality studies/RAMOS is applied, which envisages determination and study of the causes of death of all women of childbearing/reproductive age in the community or population. It uses a variety of data sources (e.g., interviews of family members and midwives, records of civil status, documents of health care institutions and ceremonial services, etc.). Almost all above mentioned methods produce pregnancy related deaths (deaths during pregnancy or within 42 days of termination of pregnancy irrespective of the cause of death)", but not maternal deaths, i.e. don't break down death causes by direct, indirect, external and accidental. In addition, they provide rather retrospective than current estimate of MM. A number of countries do not have any reliable data on maternal mortality (Group C - 27 countries). They use methods of statistical modeling to estimate MM indicators.

The 2005 study used a revised and improved methodology, which enabled not only to obtain data for 2005 MM, but also to assess global and regional trends since 1990[10]. According to this report, jointly developed by WHO, UNICEF, UNFPA and the World Bank, in 2005 total of 536,000 women died across the world from maternity related causes, and in 1990 - 576 000 women, i.e. the MMR has declined less than 1% per year (versus 5,5% required to achieve the Millennium Development Goals). It should be noted, that within the framework of the 2005 Study, Kyrgyzstan was *not* referred to the list of countries with complete registration of death and reliable detection of its causes, and the data were calculated by statistical modeling. The calculated indicator made 150 per 100,000 livebirths, which is higher than indicators, obtained through previous years studies.

Later, the Maternal Mortality Estimation Inter-Agency Group (MMEIG) revised its earlier estimates and in September 2010 has released a new, fifth Report on estimation of maternal mortality in the world[11]. In the new report, the estimated number of women, dying from complications during pregnancy or childbirth is significantly reduced in comparison to previous reports. According to new data, for the entire period of 1990-2008, the number of maternal deaths worldwide got decreased by 34% - from 546 to 358 thousand, MMR comprised 260 per 100, 000 live births, and the average annual rate of MMR decline - 2.3%. The differences in the estimates of 2005 and 2008 are accounted for by the authors by the changes in calculation methodology. Firstly, the database has been significantly expanded; in 2005 there were no national data on maternal mortality from 61 countries, and in 2008, data was not available only from 24 countries; all nationally representative surveys after 1985 were included into the review. Secondly, a multilevel regression model was developed for the last round, which differed from the model used before. Thirdly, an attempt was made to exclude the deaths for

[10] Maternal Mortality in 2005: According to assessments of WHO, UNICEF, UNFPA and World Bank.//WHO, 2008.
[11] Trends in Maternal Mortality: 1990 to 2008. Estimates developed by WHO, UNICEF, UNFPA and The World Bank. World Health Organization 2010.

accidental, external causes, which, by definition, are not relevant to maternal mortality. In this report, the KR has been classified to the Group B countries (complete registration of deaths by causes is not in place, but there are other sources of data). MM ratio of the KR has also been adjusted, and made 78 and 81 per 100 000 live births for 2005 and 2008, respectively.

The latest report was published in May 2012, it contains estimates for 2010 and recalculated indicators for 1990, 1995, 2000 and 2005. According to the latest estimates of Maternal Mortality Estimation Inter-Agency Group, between 1990 and 2010, the number of maternal deaths decreased by 47% - from 543 to 287 thousand women, MMR made 210 per 100 000 live births, and the average annual rate of decline in MMR - 3.1% . According to the latest 2010 data, MM ratio for the KR comprised 71 per 100,000 live births, which is the highest among the countries of Eastern Europe and Central Asia.

Thus, MMR in Kyrgyzstan, derived from all indicated WHO studies, is much higher compared to the figures of official statistics in the country.

MICS. The result, obtained in the framework of the 2006 MICS, is also well above the official statistics data, but lower than the one, presented in the WHO reports - 104 per 100 000 livebirths. The survey on measuring maternal mortality used the so-called "sisterhood method". The essence of it comes down to fixing the answers/responses of nurses/respondents about the woman's death during pregnancy and delivery. In contrast to the direct methods, probabilities of Reproductive Age (RA) women's deaths due to pregnancy and delivery are estimated under the "sisterhood method". According to experts, this method does not exclude the double counting of the same MM case, so it must be used with caution.

4.2 Quality of Maternal Mortality Data

During 1990 -2000, registration of maternal mortality cases has worsened, as evidenced by both -the increase of differences between the RMIC and the NSC indicators, and significant differences between indicators of official public/state statistics and international studies' data, where the indicators were higher by 2 and more times (Table 9). As the issues of maternal and child health have always been important for the country and were included into the priority programs under the National Strategy for Health Reform "Manas Taalimi" since 2006, the MOH significantly activated the work to improve registration and detection of MM causes[12]:

- ***Definition of "Maternal Mortality" was approved according to the ICD-10*** in order to fully assess the loss of pregnant women (from abortions, ectopic pregnancy, obstetric and extragenital pathology during the entire period of gestation), parturient and postpartum women.

- ***Moratorium on administrative penalties/punishments*** for completeness and accuracy/reliability of the data on maternal mortality was introduced;

- ***Introduction of "Confidential Enquiry into Maternal death" (CEMD) was initiated.*** The KR became one of the first CIS countries to implement the WHO initiative "Beyond the Numbers", where the focus was made on the use of qualitative data collection methods for

[12]KR MOH Decree № 292 dated 2008 «On Transition towards Definition «Maternal Mortality/Death» in compliance with ICD X edition and entering changes to the composition of the Republican Commission on Prevention and Reduction of Maternal and Perinatal Mortality».

better analysis and understanding of the actual causes of Maternal Deaths (MD). During 2006-2010, WHO and UNFPA jointly with the Initiative Group, consisting of local consultants, carried out all the preparatory work, including adaptation of data collection tools, information and training of specialists in the methodology of the approach, etc. Since the financial support was limited, the work was carried out only in Oblast health care organizations and pilot rayons without regular monitoring and supervision. Proper audit was started in 2010 and included the following steps: (1) gathering information from medical records, which ensured complete confidentiality and anonymity of participants; conducting an anonymous interview of health personnel and relatives of the dead woman, using the developed questionnaires (survey is conducted 1-2 months later); (2) transmission of information to the Independent Committee, which provides logistics and completeness of data; and (3) review of the materials by a multidisciplinary team, consisting of an obstetrician-gynecologist, midwife, resuscitator, pathologist, forensic medicine expert, etc. At the moment, data collection is in a progress and the work is under way on the fourth stage, when summary analysis will be developed based on thorough review of all the obtained data. This data collection technique enables to get a better understanding of the changes in the MM causes structure, significance and value of various conditioning factors, including the impact of barriers within the health system and develop targeted recommendations and strategies designed for the Ministry of Health, Government and the public accordingly.

- ***"Near Miss Cases Review"*** was introduced (on a pilot basis), when every difficult/complicated case is discussed and reviewed, including interview of the patient; organization and adequacy of medical measures/activities is assessed. The main purpose of this type of review is to improve performance and training of health specialists.

- ***Changes were entered into the Regulations and timing of submitting information on MD cases[13].*** As part of this Decree, the revised recording and reporting forms on maternal mortality were approved, and changes to the regulation on informing about MD cases were entered (Appendix 1). Currently, the algorithm has been developed, under which each MD case is effectively reviewed first at the Rayon level, with involvement of health professionals from the Delivery unit/department and primary health care (hereinafter PHC), who directly managed the woman (for 1 day). Then it is followed by the review of the case at the Oblast level, jointly with the Oblast Coordinator in charge of maternity, and Oblast level specialists (during 3 days). Then, the selective review of MD case is conducted on the Collegiums Meeting of the MOH with involvement of tertiary health care level specialists.

However, according to the respondents, despite the implemented measures, the problems with the quality and completeness of data on MM still persist due to a number of reasons:

- ***The system is still punitive***. Virtually all the interviewed doctors felt that the system has not changed and remains to be punitive.

"... previously causes of maternal deaths were detected, the doctor was referred for training to upgrade skills, and now - it all ends in punishment ..."

(Excerpt from interview)

[13]KR MOH Decree №330 as of 24.06.2011 «On Improvement of completeness of registration, timely reporting of MD cases to authorized bodies and reliability of maternal Mortality Ratio».

In addition to administrative sanctions and penalties of the management (sometimes imposed on innocent people as well), doctors have to deal with prosecutors. In compliance with the current rules, in every maternal case, the prosecutor's office suppresses all medical documents from the health care facility to identify the degree of criminal liability of health staff. Usually, this is a lasting and controversial process, quite often implying significant financial expenditures and emotional stress for health staff. On the one hand, it contributes to hiding maternal death cases or making corrections in medical records and documents, and on the other hand it decreases quality of analysis, conducted under "Confidential review of maternal mortality cases"..

- ***Inadequate attention given to registration of MM cases in non-profile departments and hospitals.*** Although, in general, respondents pointed out a significant improvement in registration of MM cases since 2009, there are still problems with incorrect coding of maternal deaths (despite periodic training on accounting of MM), particularly in non-profile departments and hospitals, where the woman stayed due to an extragenital pathology. For example, if a woman dies of cardiovascular disease or tuberculosis while being pregnant, then this death case is registered as cardiovascular disease or tuberculosis, and not as Maternal death, i.e. proper attention is not given to identification of the exact cause of woman's death and its correct classification; no notes are made in the death certificate, indicating pregnancy condition. Revealing of under-registered maternal deaths and ensuring complete maternal deaths registration requires regular monitoring and selective review/ scrutiny of notes in the very medical records of reproductive age patients.

- ***Disinterest of the woman's relatives.*** In case of maternal death quite often relatives are against the autopsy, and to avoid it, the pregnant woman can be registered in the documents not as dead, but as a discharged woman. In addition, there are virtually no incentives for timely registration of death cases in Registry Office agencies.

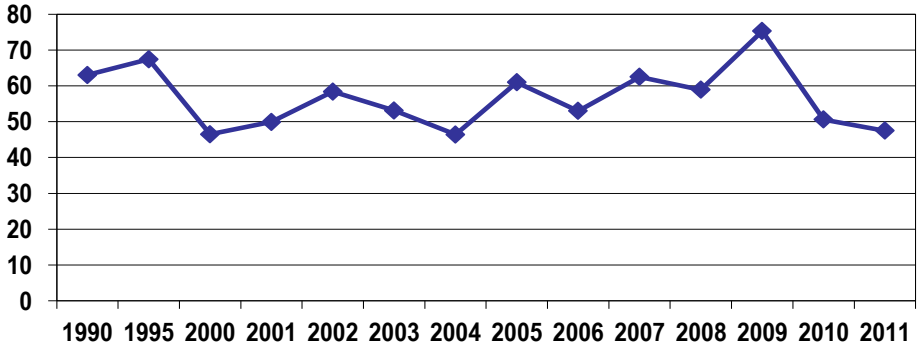
- ***Low quality of filling out Statements on Death.*** During the last revision of recording and reporting forms and procedures for registration of maternal deaths, hopes were pinned on achieving a significant improvement in the quality of filling out death statements, but it did not happen. Forensic experts are not trained, and still make a lot of errors; the quality of documents remains to be low (no dates, incorrectly stated or incomplete diagnosis, etc.). Expertise of each lethal case is the responsibility of the Mandatory Health Insurance Fund (MHIF), but it is a very time and resources consuming process, and expertise is not always conducted in full.

- ***Inadequate conditions for quality forensic medical expertise/examination***. There is a shortage of forensic pathologists in the country; there are no opportunities to maintain their competence and qualification; facilities and equipment of the post-mortem laboratory (equipment, reagents, etc.) need to be upgraded. If in the past the conclusion of forensic medicine examination was crucial in establishing the true causes of death, and clarifications were entered in formation of the final diagnosis, then now, after forensic examination, the clinical diagnosis remains the way it was initially made at the HCO department/unit; or quite often pathologic diagnosis and clinical diagnosis don't match.

4.3 Trends in Maternal Mortality Ratio in the KR

According to the RMIC data, the maternal mortality ratio in the country for 1990- 2011, considerably varied without a clearly defined and stable tendency towards decline (Figure 2).

Figure 2. Maternal mortality ratio in the KR, 1990, 1995 and 2000 – 2011, per 100000 live births



Source: RMIC

Significant rise of MMR in 2009 is also attributed by specialists to the measures, which have been taken by the MOH to improve MM registration in the country (see Section 4.2.). The Maternal mortality level is also unstable in almost all the oblasts/regions of the country, with significant variations from year to year (Table 10). In the mid-90's, the situation was particularly alarming in Issyk-Kul (188.5), Naryn (134.3), Jalalabad (88.8) Oblasts and in the cities of Bishkek (103.7) and Osh (98.4). In subsequent years, the situation has improved a little bit in some oblasts, but remains to be unstable, especially in the poorer socio-economic oblasts like: Naryn, Talas (especially during 2002-2005; yet, some improvement is observed in 2011) and Issyk-Kul (high rates remain since 2005).

Table 10. Maternal mortality ratio (per 100000 live-births), by Oblasts/Regions

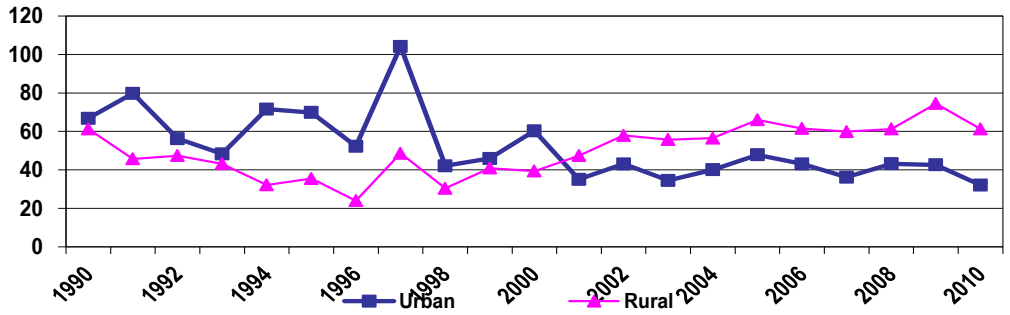
Oblasts/ Regions	1996	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
KR	**65**	**46,5**	**49,9**	**58,4**	**53,1**	**46,4**	**61**	**53**	**62,5**	**58,9**	**75,3**	**50,6**	**47,5**
Batken	-	32,2	31,3	79,8	43,4	44,4	42,4	38,5	93,6	66,6	41,7	59,7	66,9
Jalalabad	88,8	48,6	33	63,5	54,7	68,6	77,9	78,3	49,3	62,7	40,3	34,6	29,9
Issyk-Kul	188,5	59,9	70,1	58,3	65,4	60,7	97,8	81,2	110	122,9	72	70,4	62,6
Naryn	134,3	32,4	129,3	75,2	29,2	89,4	89,6	60,5	77,9	61,6	135,6	83,5	83,3
Osh	50,9	30	33,9	40,8	34,4	25	61,9	60,8	33,4	54,4	117,4	59,8	47,6
Talas	28,7	43,3	40	113,1	104,1	89,3	94,8	33,8	137	51,1	61,3	87	40,9
Chui	25,1	36,5	74,9	44,2	88,7	38	39,6	36,6	54,2	34,4	83,3	49,5	64,1
Bishkek city	103,7	99,7	38	26,3	40,8	7,2	20,3	24,4	34,5	22	30,6	34	28,8
Osh city	98,4	24,7	24,5	95,4	40,8	47,3	44,8	21,5	101	57,8	187,2	-	35,7

Source: Republican Medical Information Center

It is interesting to note that, according to the NSC data, maternal death cases prevailed in the urban population till 2000 (which is more to do with under-registration of maternal death cases in the rural areas). Since 2000, the ratio has changed: the MM rate dropped down in the urban

population from 60.3 in 2000 to 32.1 in 2010, and MM rate has significantly increased in the rural population - from 39.4 in 2010 up to 61.3 in 2010. According to 2010 data, the MMR in rural women is generally higher than that of women living in urban areas across Kyrgyzstan by 1.9 times (Figure 3).

Figure 3. Maternal Mortality ratio in the KR, 1990 – 2010, by Urban and Rural Areas, per 100000 live births



Source: *NSC, MDG Database*

Regarding the MM structure, such causes as Toxemia/ Gestosis, Septic complications and Bleeding were dominating up to 2003. Since 2004, Bleedings (42.6%), then - Preeclampsia / Eclampsia (22.2%) and Sepsis (20.4%) have become the main causes of MM, i.e. the conditions that are dependent on proper care and management/supervision of women during pregnancy, delivery and postpartum period (Table 11).

Table 11. Main causes of Maternal Mortality (% of total), 1999-2011

	1999	2000	2003	2004	2005	2006	2007	2008	2009	2010	2011
Direct obstetrics causes, including:	-	-	89,3	86,3	89,6	100	87	82,7	74,5	70,3	76,1
Obstetric bleedings	22,9	13	18	31,8	43,3	34,4	52,2	29	35,5	44,2	42,6
Gestosis/ Hypertension disorders	-	-	40	22,7	26,7	34,4	22,4	22,6	26,3	23,1	22,2
Toxicosis	37,5	38	-		-	-	-	-	-	-	-
Septic complications	12,5	18	16	11,4	10	7,8	10,4	21	18,4	3,8	20,4
Uterus rupture	8,3	2,2	4	6,8	3,3	1,6	0	1,6	0	0	1,9
Other	18,8	29	22	27,3	16,7	21,9	14,9	25,8	19,7	28,8	12,9
Indirect obstetrics causes	-	-	10,7	13,7	10,4	0	13	17,3	25,5	29,7	23,9

Source: *Republican Medical Information Center*

Since 2000, the percent of MM from “Other” causes (amniotic fluid embolism, pulmonary embolism, anaphylaxis, etc.) has increased. Also percent of MM due to indirect causes has also increased (extragenital pathologies). Experts have pointed out that among “other” causes of MM, the number of maternal death cases due to TB increases.

4.4 Conclusion

There was a certain problem with collection of statistical data on maternal mortality in the country, which was reflected in differences between MMR from various sources, both public (RMIC, NSC), and assessments of international organizations (WHO, UNICEF, UNFPA, WB). Obtaining of complete and accurate data on MM was hindered by a number of reasons, including: a significant deterioration of socio-economic situation of the population in the country (deaths at home, reduction of autopsy rate, lack of documents or low priority given to their correct filling out, etc.); punitive nature of the health system itself, which in some cases stimulated staff not to disclose the maternal death fact; registration of maternal deaths not in full compliance with the ICD-10, which also resulted in incomplete registration, etc. Many of these causes continue to be relevant today. However, it should be noted that since 2009, the Ministry of Health with the support of international partners (WHO, UNFPA, UNICEF, etc.) is consistently implementing a number of measures which are supposed to ensure improvements in completeness, accuracy and reliability of statistical data on MM in the Kyrgyz Republic.

The main source of information on MM in the country is the RMIC. Overview of the trends of the MMR for 1990 - 2011 period indicates the extreme instability and lack of a clear downward trend. MMR is higher in rural areas than in the urban ones. The most vulnerable oblasts regarding to MM are Naryn, Talas and Issyk-Kul (the poorest and economically unstable regions). Starting from 2004, bleeding has become the leading cause of MM, and growing share accounts for other reasons, with extragenital pathology playing a growing role.

4.5 Recommendations

- Reinforcement of interagency cooperation (prosecutor's office) to ensure conditions for observing moratorium on punishments in maternal death cases, which shall significantly improve completeness and quality of data on MM;

- Conduct monitoring of filling out the recording-reporting forms for completeness and accuracy of maternal deaths registration in non-profile departments of hospitals at various levels, including specialized HCOs;

- Cover hospital medical staff at various levels, including specialized ones, as well as health personnel of forensic medicine, with training in order to improve the quality of filling out recording and reporting documents and registration of maternal deaths;

- Improve the system of civil registration, which will improve the accuracy/reliability of data on maternal mortality;

- Seek financial opportunities to expand implementation of "Confidential Enquiry into Maternal death" and regular analysis of the obtained data to all regions of the country. This initiative, as well as "Near Miss Cases Review", will help to improve the quality of services provided.

CHAPTER 5. PROGRAMS AIMED AT MATERNAL HEALTH IMPROVEMENT

Brief information on National Programs, stipulating activities on maternal health protection, is presented in Table below (Table 12).

Table 12. Main Programs, aimed at maternal health protection

Program	Main Objectives and Achievements	Comments
National Health Care Reforms Programs		
«Manas», 1996-2005	PHC Strengthening; Introduction of Family Medicine principles; Development of Clinical Protocols and Guidelines; Introduction of SBP and MHIF AP.	Piloting of various approaches towards delivery of health care services. Inadequate coverage and coordination of activities in the area of MCH protection, implemented within the National Programs and Programs of International organizations.
«Manas Taalimi», 2006 - 2011	WHO efficient technologies were introduced on ensuring safe pregnancy under promotion of efficient Perinatal care in 60% maternity facilities. Programs on obstetrics and gynecology for the KSMIT&RC taking into account WHO recommendations and evidence based elements have been unified / Access of pregnant women to services has improved within the SBP and MHIF AP. Systems of registration of children's and maternal death cases have been improved.	The program was implemented on the basis of SWAp and enabled to significantly expand the coverage of regions with efficient Perinatal services, which were successfully piloted.
«Den Sooluk», 2012-2016	The Objective is to improve quality of services during pregnancy and delivery through introduction of efficiency proven methodic and implementation of specific results on key indicators, based in detection and overcoming of barriers .	Implementation of the Program started in the second half of 2012 on the basis of SWAp.
State Programs on provision of population with health care		
State Benefits Package MHIF Additional Program on Drugs Supply at ambulatory level	Within the SBP and expanded MHIF AP, it is envisaged to provide all health services to women during pregnancy and delivery free of charge.	The programs do not work out to a full extend for the following reasons: (i) financial gap in programs funding; (ii) large proportion of uninsured women; (iii) inadequate awareness level of population /women about benefits under these Programs; (iv) low awareness about possibility of purchase insurance policy.
Programs on maternal health protection		
National Strategy on Reproductive health, 2006 - 2015	Phase-in implementation of priorities was envisaged. At the first phase (2006 -2010) there were four priorities: 1) State policy in	Due to the inadequate earmarked financing, implementation of the first phase priorities was conducted

Program	Main Objectives and Achievements	Comments
	the area of Reproductive Health protection (two laws[14] have already been passed) 2) Safe motherhood; 3) Reproductive choice; and 4) Control of HIV/AIDS, STIs. At the second phase (2011-2015) three directions are planned: 5) Reproductive Health of teenagers; 6) Cancer of reproductive system; and 7) Prevention and fight against violence.	partially with financial support under "Manas Taalimi " program and international donor organizations. Plan of activities and sources of financing for the second phase (2011-2015) have to be determined.
Program on improvement of Perinatal care in the KR, 2008-2017	This program is based on introduction of parental care regionalization system. By now: (i) Clinical Protocols have been revised and approved with inclusion of efficiency proven priority interventions; (ii) step by step expansion of efficient Perinatal technologies is carried out in the uncovered oblasts of the country; (iii) Packages of Perinatal services for every health care level have been developed.	The Program is implemented with the support of Development Partners - WHO, USAID, UNFPA, UNICEF, GTZ, KFW, ADB, Aga khan Foundation, etc.) as well as within SWAp..

Active reforms and transformations in health care system were launched under the first health care reforms Program "Manas", designed for the 1996 - 2005. In addition to major structural reforms[15], changing the format of services delivery, namely introduction of Family Medicine[16], much attention was paid to the content of practice. It implies development of clinical protocols and guidelines based on evidence-based medicine, extensive training and retraining of medical personnel. During 2000-2004, the following maternal health protection programs were implemented in the country with the help of international donors: "Promoting Effective Perinatal Care» (UNICEF/WHO), «Prevention of iron deficiency anemia in pregnant women» (UNICEF), «Maternity and Childhood Protection" (KfW), "Safe Motherhood» (UNICEF/WHO) and other programs, which contained such interventions as safe abortion, emergency obstetric care, social patronage, supply of necessary equipment and infrastructure improvement, etc. But the results of qualitative selective studies indicated that the coverage of these interventions did not exceed 20-30% of population[17].

Due to this, and the need to accelerate progress towards MDGs 4 and 5 implementation, the next program "Manas Taalimi", which was implemented with a wide-sectoral approach (SWAp), declared maternal and child health as a priority program. Within the framework of the program it was managed to expand implementation of previously piloted efficient interventions in the area of care/management of women during pregnancy, delivery and postpartum period[18]. Clinical protocols were updated, specialists were trained at both primary health care level and at the hospital levels. Managers of health care organizations were also actively engaged into the process; so better understanding of obstetrics challenges has accelerated introduction of targeted technologies into practice. Thus, with support of various donor organizations, as well

[14] Two new regulatory documents were passed: Law of the KR "On Reproductive Rights of Citizens and Warranties of their implementation", is approved by the GoKR Resolution No 185 as of 20.04.2008 and Law of the KR "On enrichment of baker's flour", is approved on 01.2009.
[15] Assessment of «Manas» Health Reforms Program (1996 – 2005): Restructuring of health services delivery system. Policy Research document №45;
[16] Assessment of «Manas» Health Reforms Program (1996 – 2005): Primary health care service. Research document № 46;
[17] National health care reforms program «Manas Taalimi», 2006 – 2010.
[18] Assessment of «Manas Taalimi» Health Reforms Program implementation, KR MOH, April 2011.

as the budget funds, significant improvements were implemented in the infrastructure, drug supply of maternity units, etc.

Implementation progress of the rest of the programs is significantly restricted by the lack of financial resources, available in health care system. Other impeding factors have been identified by experts, directly involved in implementation of above programs (Sections 6 and 7).

Thus, the issue of maternal health is one of the priorities and is consistently reflected at every stage of major National health care programs. The new National program "Den Sooluk" envisages activities, aimed at removal of barriers in health care system and consistent implementation of the planned measures to protect maternal health.

CHAPTER 6. RESULTS OF ANTENATAL CARE ASSESSMENT, PROVIDED TO PREGNANT WOMEN AT PRIMARY HEALTH CARE LEVEL

Quality of antenatal care, provided at Primary Health Care (PHC) level, was evaluated on the basis of Pregnant Women's Patient Cards (6.1.) and results of parturient and post-partum women interview (6.2.). The interview of PHC health staff was mainly aimed at detection of factors, negatively impacting the antenatal care quality (6.3.).

6.1 Analysis of Pregnant Women's Patient Cards at PHC level

The coverage level of pregnant women with antenatal care has always being quite high in the Kyrgyz Republic (KR) (96,9%[19] on average in the country, and from 92,7 up to 99,4%[20] in the oblasts), but the contents and quality of medical follow up required significant improvement. Therefore, in recent years, much attention was paid to improvement of approaches towards antenatal care, which were reflected in Clinical Protocols[21], revised and approved by the Ministry of Health Decree № 539 dated 21 October 2008. Upon recommendations of experts, the program of physiological pregnancy management incorporated the main proven efficiency interventions; also, such issues as frequency of visits to health care facilities and various analyses/tests were revised; certain types of manipulations and administration of excessive amounts of drugs were cancelled.

Review of pregnant women's patient cards was aimed at assessment of practice compliance with new clinical protocols on management of physiological pregnancy. To do this, the following main criteria have been selected and applied:

- Dates of registration of women for pregnancy medical follow up and number of antenatal visits;
- Arterial blood pressure measurement;
- Filling out of Gravidogramm;
- Hemoglobin level;
- Urine test for proteinuria and bacteriuria;
- Other laboratory-diagnostic tests (HIV-status, ultrasound, etc.);
- Counseling;
- Administration of drugs.

6.1.1 General Description of Pregnant Women

Total of 223 patient cards of pregnant women's, followed up in Osh, Talas and Chui Oblast Family Medicine Centers (FMC), were reviewed. Age wise, of the total number of women, 81,6% were at the age of 18-32 years, at that, women under 22 years of age prevailed in Osh oblast (34,4%), in Talas– at the ages of 23-27 years (34,9%) and in Chui Oblast, women of older age category had a relatively high percent: 28 – 32 years old (25,5%) and 33 years old and older (14.9%); as for educational status, there were 66,4% women with secondary

[19] Cluster survey by multiple indicators, 2006. KR National Statistical Committee and UNICEF.
[20] Zulfikar A.Butta, Yasir P. Khan. Health of women and newborns in Kyrgyzstan and Chui Oblast: evaluation and justification of interventions. In accordance with TOR of the KR MOH and UNICEF, Bishkek, 2010.
[21] Clinical Protocols on Obstetrics-Gynecology for primary, secondary and tertiary health care levels, 2009.

education (68,9%, 61,6% and 70,2% in Osh, Talas and Chui Oblasts correspondingly), 20,6% with higher education (21,1%, 20,9% and 19,1% in Osh, Talas and Chui Oblasts respectively); marital status: 62,8% married women, 6,3% - not married, 25,6% - no data on marital status; 35,3% were registered for 1st pregnancy follow up with a HCO, 44,2% - for second and third pregnancy management, 13,1% - for 4th pregnancy, the rest 7,4% of women were followed up for their 5th and over pregnancy.

6.1.2 Results of the Analysis

Time of registration for pregnancy/medical follow up and number of visits

On average, 81,2% of women were registered with HCOs for pregnancy follow up before 12 weeks of pregnancy (in the first trimester) (Table 13).

Table 13. Number of women, registered with HCO for pregnancy follow up before and after 12th week of pregnancy, by oblasts

Oblast	**Osh n – 90**		**Talas n – 86**		**Chui n – 47**		**Total n – 223**	
Terms	**Absolute number**	**%**	**Absolute number**	**%**	**Absolute number.**	**%**	**Absolute number**	**%**
Before 12 weeks inclusive	70	85,4	65	77,4	38	80,9	173	81,2
After 12 weeks	12	14,6	19	22,6	9	19,1	40	18,8
Total	**82**	**100**	**84**	**100**	**47**	**100**	**213***	**100**

Note: * - information was not indicated in 10 patient cards.

The largest percentage of early/timely pregnancy follow up registration was observed in Osh oblast - 85.4%. It should be noted, that a note was made in the patient card that the woman was registered during sentinel household visit, but first records and test results referred to the later pregnancy term (16 weeks or more). In addition, review of this indicator for the whole country for 1992 - 2011 period indicated its marked decline over the last two years from 73,8% in 2009 to 52,1% in 2011 (Figure 1).

According to the approved Clinical Protocol, 5-6 visits are recommended for a normal pregnancy. According to the patient cards data, the total number of visits varied, making 44.4% per 5 and 6 visits on national average (24.7% and 19.7% respectively).

Table 14. Number and proportion of pregnant women by number of visits during pregnancy, by Oblasts

Oblast	**Osh n – 90**		**Talas n – 86**		**Chui n – 47**		**Total n – 223**	
No of visits	**Abs. number**	**%**	**Abs. number**	**%**	**Abs. number**	**%**	**Abs. number**	**%**
Less than 5 visits	59	65,6	21	24,4	15	31,9	95	42,6
5 - 6 visits	26	28,9	57	66,3	16	34,0	99	44,4
Over 6 visits	5	5,6	8	9,3	16	34,0	29	13,0
Total	**90**	**100,0**	**86**	**100,0**	**47**	**100**	**223**	**100,0**

When interpreting the Osh oblast data, one should take into account that the analysis included not only the cards of women, who have already delivered, but partially of women in the third trimester of pregnancy, i.e. women, who were still under medical follow up. At that, frequency of visits made at least 1 time per month on average. As for Talas Oblast, most often women paid 5-6 visits to a doctor (66.3%) during the entire period of pregnancy. In Chui Oblast, the portion of women with the visits category “over 6” (34%) increases compared to other oblasts (5.6% and 9.3% in Osh and Talas respectively). It should be pointed out that only one woman out of 16 had the note of pathology presence ("Threatened Miscarriage") in her patient card, which probably was the cause of more frequent visits.

Arterial Blood Pressure Measurement

Is measured in every pregnant woman, but not at each visit (Figure 4). Thus, in Chui Oblast, only 84.8% of the patient cards (39 of 46) had records of blood pressure readings at each visit of pregnant women. This may be due to insufficient time to fill out cards. The highest level of the indicator is marked in Talas Oblast (96.5%), the average rate made 92.8%.

Figure 4. BP Measured at each visit,%

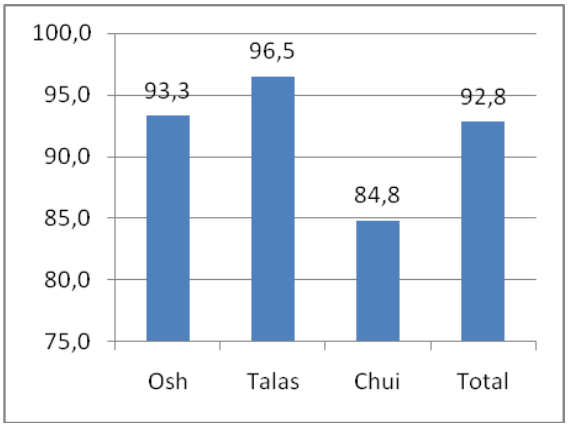
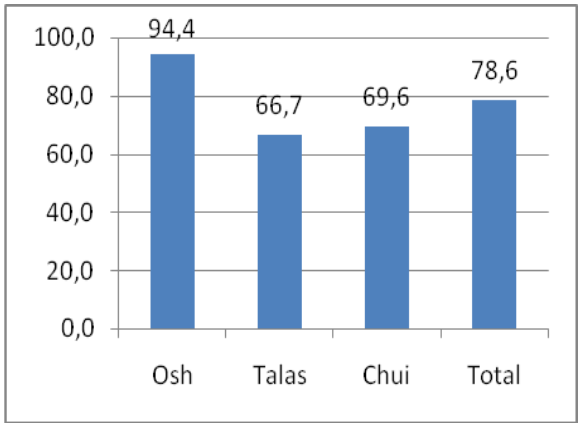


Figure 5. BP measured on both arms,%



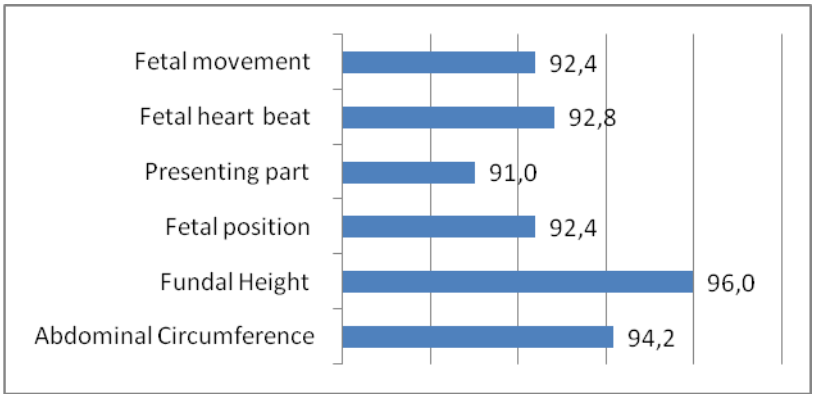
As seen in Figure 5, readings of blood pressure on both arms of pregnant women were indicated in 78.6% of the patient cards on average, the highest level of this indicator was detected through charts review in Osh Oblast (94.4%).

In assessing the objective condition of pregnant women, in addition to arterial blood pressure measurement, attention is paid to detection of risk factors and symptoms of various complications. Thus, patient cards in Family Medicine Centers (FMC) of Osh (38.9%, 35 out of 90 cards) and Chui (70.2%, 33 of 47 cards) Oblasts had records/notes of risk factors, mainly due to different extragenital pathologies (60.3% 41 out of 68). Though, risk factors were not indicated in the patient cards, selected for analysis in Talas Oblast FMC. 74.9% of the total number of cards had records of pregnant women weight measurement at each visit (167 of 223), 95.5% -of presence or absence of edema.

Assessment of Fetal Condition

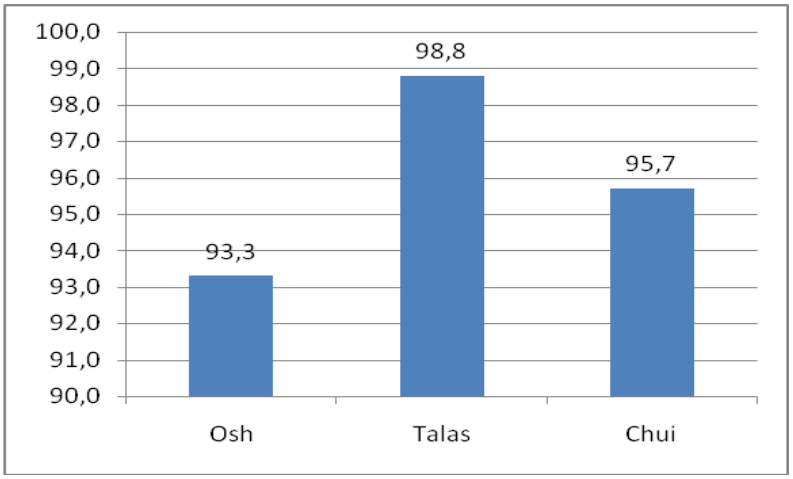
The main parameters, reflecting the fetus condition and development were recorded on a regular basis in more than 90% of patient cards (Figure 6).

Figure 6. Fetus Condition Assessment in the surveyed HCOs, in %



Information on fundal height was indicated in 96% of patient cards on average (Figure 7). However, this available data was extremely rarely displayed on Gravidogramm in all the oblasts of the country.

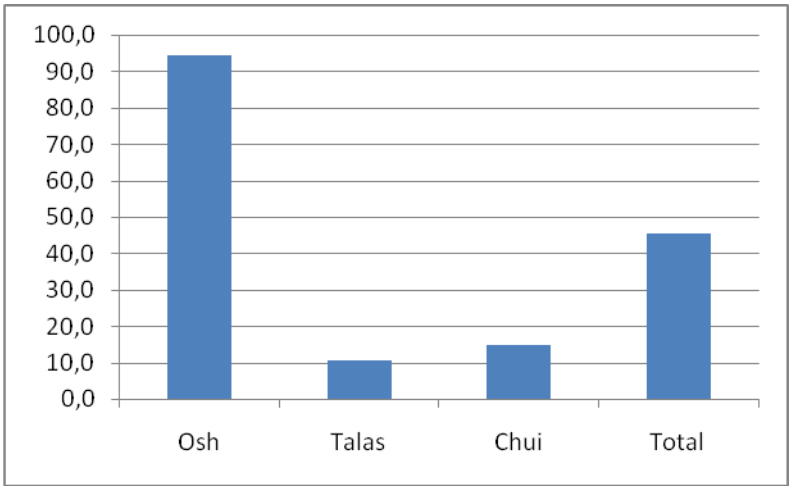
Figure 7. Fundal height measurement, by Oblasts, in %



Level of Hemoglobin

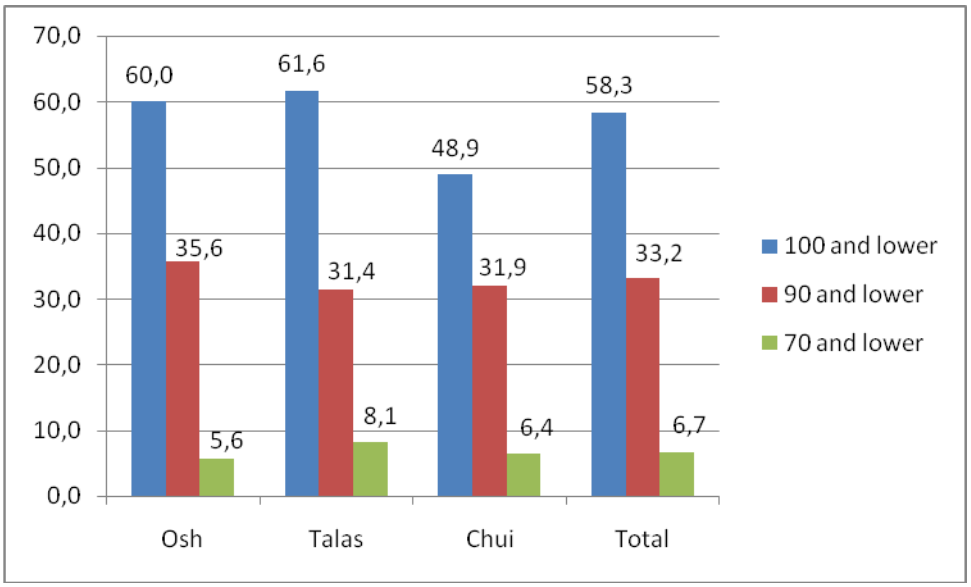
According to the patient cards data, most of the women, 76.2% (170 of 223), had their clinical blood analysis performed (CBA) from 1 to 3 times, 22% of women (49 of 223) - from 4 to 8 times. Pregnant women, managed by Osh Oblast FMC, had their CBA performed almost at each visit (in 94.4% of cases), in Talas and Chui Oblasts, similar indicator is much lower - 10.5% and 14.9%, respectively (Figure 8).

Figure 8. Clinical Blood Analysis at each visit, by Oblasts, in %



On the whole, 58,3% of women had various degrees of Anemia during pregnancy (Figure 9). Of them 33,2% fall on medium degree Anemia (Hemoglobin level - 90-70 g/L) and 6,7% - on severe Anemia (Hemoglobin level lower than 70 g/L). This indicator was somewhat lower in Talas Oblast.

Figure 9. Number of women with different severity degrees of Anemia, by Oblasts, in %



Urine test for Proteinuria and Bacteriuria

The frequency of urinalysis (UA) among pregnant women was significantly higher than the frequency of CBA. Thus, 70% of women had UA performed from 2 to 5 times, 16.6% - from 6 to 9 times during pregnancy. Protein in the urine (mainly 0.33 g / L) was detected in 24.2% of

cases (Figure 10) on average. The maximum rate was found in patient cards of Osh Oblast (41.1%), the lowest - in Talas Oblast (4.7%). 27 cards (12.1%) had records on urine culture inoculation for detecting Bacteriuria (Figure 11). The minimum percentage was also found in Talas Oblast (2.3%).

Figure10. Frequency of Proteinuria detection, in %

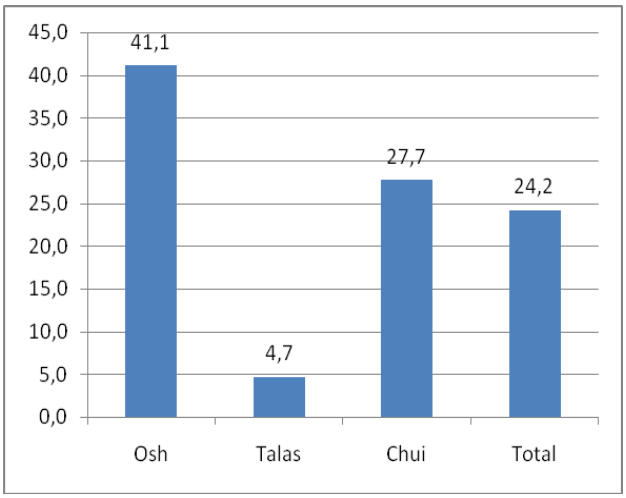
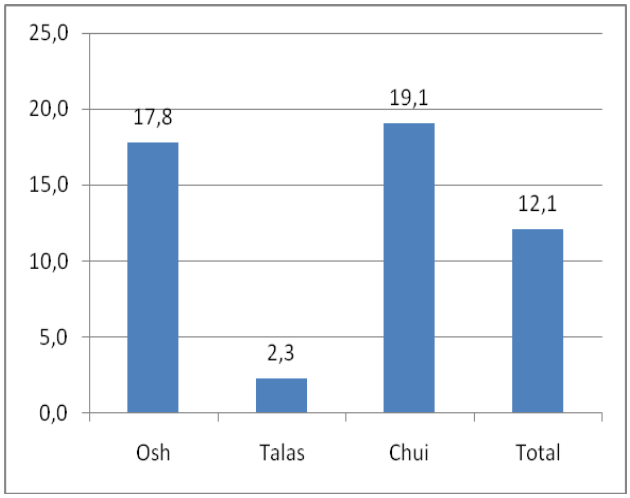


Figure 11. Urine culture inoculation, in %



Other Lab –Diagnostic Studies and Tests

In compliance with the approved Clinical Protocol, a number of other lab tests have to be performed at the first visit of a pregnant woman to a HCO (Table 15)

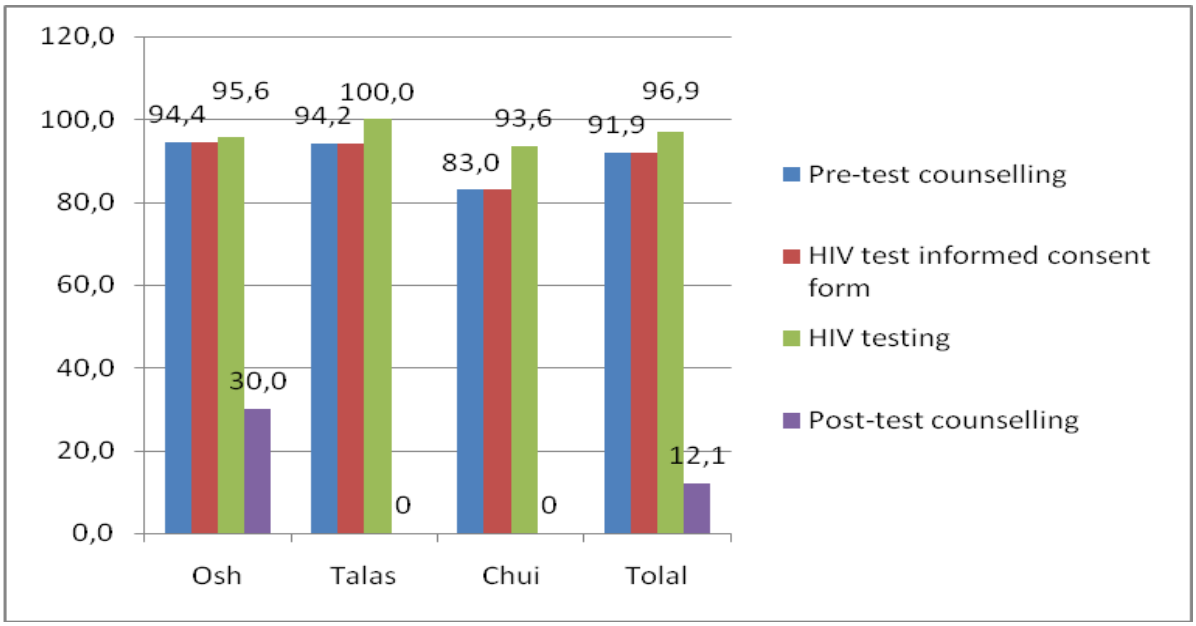
Table 15. Frequency of lab tests performed during pregnancy, by Oblasts, in %

Oblast	Osh n – 90		Talas n – 86		Chui n – 47		Total n – 223	
Test/analysis	Abs.number	%	Abs.number	%	Abs.number	%	Abs.number	%
Blood Group	72	**80,0**	84	97,7	47	100	203	91,0
Rh Factor	71	**78,9**	83	97,6	47	100	201	90,5
RW	87	97,8	85	100,0	42	**89,4**	214	96,8
Additional Lab tests	0	**0**	6	**7,0**	45	95,7	51	22,9

Most of the patient cards of pregnant women contained information on blood group and Rh factor (91%), this indicator was the lowest in Osh Oblast (80%). According to the clinical protocol, RW analysis (Wassermann reaction) should be mandatorily performed at the first and fourth visits. According the cards review, the frequency of RW tests ranged from 0 to 4 times: the test was not performed in 2.7% of women, in 41.1% of cases it was performed only once, in 53.0% - 2 times, 2.3% - 3 times, and in 0.9% - 4 times. The following laboratory tests were conducted in addition to the mandatory ones: blood coagulation test, biochemical tests, blood for sugar, sensitivity to antibiotics, as well as smear for flora. Of these, 88.2% of the tests (45 of 51) were performed in Chui Oblast, which is certainly attributed to the greater opportunities of laboratory diagnostic services. The patient cards in Osh Oblast did not have any records of any additional lab tests.

According to the KR MOH Decree[22] all women, registered for pregnancy medical follow up, are subject to compulsory HIV test (given informed consent). Review of patient cards showed that in 91.9% of cases, there were records on pre-test counseling and obtaining signatures on the HIV test informed consent form (Figure 12).

Figure 12. Coverage of Pregnant Women with HIV test in the surveyed HCOs, in %



The lowest indicator is observed in Chui Oblast (83%). Of the total number of patient cards of women, who have already been tested, 5% of the cards did not have the informed consent form, and only in 12.1% of them, there were records on post-test counseling (27 cards from Osh Oblast FMC). However, as explained by health staff, all the information on additional lab tests is usually registered in a separate Records book, and because of time constrains, this information is not duplicated in the women's patient cards.

The data on performed ultrasound examinations is given in Table 16. On average, each pregnant woman had 1-2 ultrasounds (in Chui Oblast -1-3 ultrasounds).

Table 16. Frequency of Ultrasound examinations during pregnancy follow up, by Regions/Oblasts, in %

Oblast	**Osh n – 90**		**Talas n – 86**		**Chui n – 47**		**Total n – 223**	
Number of examinations	**Absolute number**	**%**	**Absolute number**	**%**	**Absolute number**	**%**	**Absolute number**	**%**
0	4	4,4	4	4,7	4	8,5	12	5,4
1	25	**27,8**	52	**60,5**	12	**25,5**	89	**39,9**
2	32	**35,6**	26	**30,2**	13	**27,7**	71	**31,8**
3	22	24,4	3	3,5	13	**27,7**	38	17,0
4	6	6,7	1	1,2	4	8,5	11	4,9
5	1	1,1	0	0,0	1	2,1	2	0,9
Total	**90**	**100,0**	**86**	**100,0**	**47**	**100,0**	**223**	**100,0**

[22]MOH Decree №400 as of 13.11.2007 «On conducting analytical study of HIV outbreak in children of Osh oblast»

Counseling and Consultation of Narrow Specialists

According to the clinical protocol, counseling and consultations for pregnant women is an important aspect of the care quality. As the proportion of women with secondary and higher education continues to change, and now women have predominantly secondary education (68.9%, 61.6% and 70.2% in Osh, Talas and Chui Oblasts respectively), giving complete and assessable information on various aspects of pregnancy, delivery and newborns care becomes particularly topical.

Table 17 shows all the topics, covered during counseling and indicated in the patient cards of pregnant women.

Table 17. Topics of counseling and coverage of women with counseling in the surveys HCOs

Oblast	**Osh n – 90**		**Talas n – 86**		**Chui n – 47**		**Total n – 223**	
Topic	**abs. Number**	**%**	**abs. Number**	**%**	**abs. Number**	**%**	**abs. Number**	**%**
Hygiene of Pregnant women	26	**28,9**	75	87,2	35	74,5	136	60,9
Social and living conditions	40	44,4	76	88,4	42	89,4	158	70,9
Nutrition of pregnant women	43	47,8	79	91,9	35	74,5	157	70,4
Partners' delivery	10	**11,1**	44	51,2	22	**46,8**	76	34,1
Breastfeeding	34	**37,8**	59	68,6	29	61,7	122	54,7
Family Planning	34	**37,8**	55	64,0	20	42,6	109	48,9
Warning signs during pregnancy	18	**20,0**	69	80,2	3	**6,4**	90	40,4
Plan of delivery	0	**0**	15	**17,4**	2	**4,3**	17	7,6

Review of the cards showed that in general, the scope of counseling on various topics is still low. However, it should be noted that according to the patient cards records, the best results in this regard were demonstrated in Talas Oblast, where high percentage of coverage was observed for almost all of the topics (from 51.2% to 91.9%). And the lowest rates for counseling of pregnant women were in Osh Oblast (from 11.1% to 47.8%). In all three oblasts, such topic as "Partners delivery" had low coverage rate (from 11.1% to 51.2%). The importance of this topic has been pointed out by experts of delivery units/departments of hospitals, as if a partner comes to the delivery unprepared/untrained, then it becomes impossible to provide on-site training to him during the delivery. In this case, help and support from a partner has minimal benefit both for the parturient woman and for health staff. In Chui and Osh Oblasts, such topic as "Warning signs of pregnancy" had a very low percentage of coverage (6.4% and 20% respectively). However, despite the high percentage of coverage on this topic in Talas Oblast, the interview of pregnant women indicated higher awareness level of women of this topic in Osh Oblast. In almost all three oblasts, "Plan of Delivery" is the weakest area.

In the course of pregnancy medical follow up/management, pregnant women also got consultations of narrow specialists, mainly in the following area: dentist (74% women), internist (30%), endocrinologist (28.3%), to a lesser extent - ophthalmologist, ENT physician, neurologist, and etc. Most commonly, consultations were administered in Osh Oblast compared to Talas and Chui oblasts. The nature of referrals was also determined by availability of this or that specialist on the FMC staff.

Prescription of Drugs

The Clinical protocol recommends to administer Folic Acid (400 mkg daily), Potassium Iodide (200 mg daily) and Iron supplements in confirmed anemia during the first pregnancy trimester.

Table 18. Frequency of administration of recommended drugs, based on the records in pregnant women's patient cards, by Oblasts, in %

Oblast	Osh n – 90		Talas n – 86		Chui n – 47		Total n – 223	
Drugs	**Abs. number**	**%**	**Abs. number**	**%**	**Abs. number**	**%**	**Abs. number**	**%**
Folic acid	55	61,8	53	61,6	25	**53,2**	133	**59,9**
Potassium Iodide/ Iodomarine	78	86,7	63	73,3	27	**57,4**	168	75,3
Iron supplements	43	**48,9**	68	**82,9**	26	55,3	137	63,1

In general, during antenatal period, women were administered Folic Acid in 59.9%, Potassium Iodide - in 75.3% of cases. From the Oblast perspective, the lowest percentage of administering these two drugs was noted in the Chui Oblast FMC. As for iron supplements, the lowest percentage of their prescription was noted in Osh Oblast - 48.8%, where the total number of women with hemoglobin level below 100 mg/l made 60% (Figure 9.). In Talas Oblast FMC, iron supplements were prescribed in 82.9% of cases (incidence of various degrees of anemia is 61.6%), the corresponding figures for Chui Oblast made 53.3% and 48.9%, respectively. The most frequently prescribed drugs were Ferropleks, Ranferon, Tardiferon, Gyno-Tardiferon, Fersinol etc. It should be noted that the information about the date of drug administration/prescription, dosage and duration of taking the drugs is not recorded in the patient cards accurately, which greatly complicated the data collection.

The list of additionally administered drugs included from 15 to 18 items (Table 19) (mainly antibacterial, antimycotic, spasmolitic drugs, vitamins etc.).

Hospitalizations

About 19,5% of women had hospitalization in their case histories (15,9%, 20,9% and 23,4% in Osh, Talas and Chui Oblasts respectively); of them 14,4%, 5,6% and 27,3% of cases in Osh, Talas and Chui Oblasts respectively had repeated hospitalizations. At that, the prevailing diagnoses for repeated hospital admission were «Miscarriage threat» (85,7%, 72,2% and 90,9% by three oblasts respectively) and «Chronic Pyelonephritis» (0%, 16,7% and 27,3% for three oblasts respectively).

Table 19. List of drugs, administered to pregnant women, by Oblasts

№	Osh	Talas	Chui
1	Amoxicillin	Amoxicillin	Amoxicillin
2	Vitamins B1, B6, E	Ampicillin	Actovegin
3	Glucose	Vitamin B1, B6	Common valerian
4	Diofestal	Venodiol	Vitamin C
5	Metronidazole	Calcium Gluconate	Gynovaks
6	Notroxolin	Genferon	Gynipral
7	Nofedipin	Dexametazone	Duovit

8	5 Nok	Doromycin	Dufaston
9	Novocain	Nitroxolin	Nistatin
10	Papaverine suppositories	Nifedipin	No-Spa
11	Polyvitamins	Metronidazole	Nitroxolin
12	Rehydron	Metoklopramid	Otoferonol
13	Cefasoline	Papaverine suppositories	Papaverine suppositories
14	Elevit	Indian kidney tea	Indian kidney tea
15	Erythromycin	Polyvitamins	Pikovit
16		Cefazolin	Trihopol
17		Erythromycin	Teknazol
18		Emfetal	Cefazolin

6.1.3 Conclusion

The review/analysis of patient cards of 223 pregnant women, followed up in the FMCs of Osh, Talas and Chui Oblasts, indicated general compliance of the practice with the main recommendations, stipulated in the revised Clinical Protocol on Management of Physiological Delivery (Table 20). However, the conducted analysis/review has revealed some drawbacks in all tree oblasts, both in the area of delivered services, and in the area of keeping/filling out of medical documents.

The data show quite high percentage of early registration of pregnant women for medical management/follow up (85.4%, 77.4% and 80.9% in Osh, Talas and Chui Oblasts respectively). However, according to the health staff, it is quite difficult to provide early/timely registration of pregnant women in practice due to high mobility of the population (especially in Osh and Talas Oblasts). Attention is drawn to the fact that the date of registration of pregnant women for medical follow up and dates of first records indicated in their patient cards vary quite widely. Moreover, rather notable sharp reduction of this indicator has been observed across the entire KR during the last two years (from 73.8% in 2009 down to 52.1% in 2011, Figure 1), which is likely due to the neglect or revision of the importance of early registration of pregnant women among the health staff. The analysis of patient cards showed that almost half of pregnant women pay 5-6 visits to HCO during pregnancy (the highest indicator is observed in Talas Oblast - 66.3%), which is fully consistent with the recommendations of the Clinical Protocol. However, it should be taken into account that the proportion of women with at least 5 visits to HCO during pregnancy is relatively high (especially in Chui oblast - 31.9%). As for Osh Oblast, it was found out through interviews with parturient and postpartum women, that many of them paid visits to doctors every month, that is, more often than it was recorded in their patient cards.

Delivery of certain services by Oblasts requires further improvement. For example, blood pressure of pregnant women is measured at each visit in the selected FMCs of Chui Oblast only in 84.8% of cases. Examination of the fetus is carried out regularly in all the Oblasts (indicators in all Oblasts are higher than 90%). However, such important tool for timely assessment of abnormalities in pregnancy and fetal development as Gravidogramm, is hardly used in the HCOs of Oblasts. Thus, the results of measuring the fundal height were laid upon the Gravidogramm extremely rarely.

Table 20. Percent of the practice compliance with the Clinical Protocol Recommendations, in %

Criteria	Total, n – 223
Timelines for registration of pregnant women for medical follow up/management	81,2
Number of visits prior to delivery	
less than 5 visits	42,6
5-6 visits	44,4
ABP measurement	92,8
Fundal Height measurement / Gravidogram	96,0
Hemoglobin Level testing at each visit	45,3
Urine analysis for Proteinuria	
2-5 analyses/tests	70,0
6-9 tests	16,6
Urine analysis for Bacteriuria	12,1
Blood Group	91,0
Rh Factor	90,5
RW	96,8
HIV	96,9
Ultrasound	
1-2 tests/examinations	39,9
2-3 tests	31,8
Counseling on topics	
Hygiene of Pregnant Women	60,9
Social-Living Conditions	70,9
Nutrition of Pregnant Women	70,4
Partners' Delivery	34,1
Breast Feeding	54,7
Family Planning	48,9
Warning Signs In Pregnancy	40,4
Plan of Delivery	7,6
Administration/Prescription of Drugs	
Folic Acid	59,9
Potassium Iodide /Iodomarin	75.3
Iron supplements	63,1

Clinical Protocol does not contain recommendations for mandatory CBA at each visit of pregnant women to HCOs. However, for example, in Osh Oblast, this percentage was 94.4%. In addition, hemoglobin level varies considerably from analysis to analysis in the same women, which may be due to the quality of laboratory performance and irregular intake of iron supplements by pregnant women. Anemia incidence made 58.3% on average, of which medium and severe anemia accounted for 33.2% and 6.7% respectively. The percentage of iron supplements intake comprised 48.9%, 82.9% and 55.3%, respectively, in Osh, Talas and Chui Oblasts, i.e., in some cases, when drugs are indicated for women, they are not prescribed, and in other cases, by contrast, supplements are prescribed as prevention. Duration of treatment raises issues as well. In most cases, iron supplements are administered for 10 days, and they are cancelled as soon as the first blood test indicates hemoglobin level above 100 g/L. But given the fact that iron supplements are quite expensive and their purchasing directly depends

on the financial solvency of woman, regularity and duration of supplements intake is not monitored by health professionals that strictly.

Urine analysis for protein presence is carried out on a regular basis in 86.6% of cases. But the percentage of Proteinuria detection varies significantly by Oblasts (41.1%, 4.7% and 27.7% in Osh, Talas and Chui Oblasts respectively). Very low prevalence is detected in Talas Oblast, and requires assessment of the quality of performed laboratory tests. Also, Bacteriuria screening, recommended during the first visit of pregnant women, is performed only in 12.1% of cases, which most likely can be accounted for by rather limited capabilities of laboratory service. For example, only 2.3% of women had this test performed in Talas Oblast.

It should be noted that during the interview, health staff of delivery/ maternity units/departments of hospitals pointed out the importance of availability of information on blood group and Rh factor, as in case of emergency blood transfusion, availability of this information saves a lot of time. The lowest percentage on these tests was observed in Osh Oblast (80% and 78.9% respectively).

Low percent or lack of additional laboratory and diagnostic studies in Talas and Osh Oblasts (7% and 0% respectively) in presence of comorbidities and hospitalizations in the pregnant women's case histories, given the information, obtained during interviews with PHC and hospital health staff about widespread urogenital pathologies, undiagnosed STIs cases, etc., - more likely indicate the problem with access towards various kinds of laboratory and diagnostic services, including ultrasound examination. Thus, smear on flora, for example, was administered mainly in Chui oblast.

As the proportion of women with secondary and higher education continues to change, and now women predominantly have secondary education (68.9%, 61.6% and 70.2% in Osh, Talas and Chui Oblasts, respectively), provision of complete and accessibly provided information on various aspects of pregnancy, delivery and newborn care is of particular topicality. The analysis/review of records in the patient cards shows that this line of work requires improvement.

It should be noted that the best results on counseling have been demonstrated in Talas Oblast, where nearly half of all topics had a high percentage of coverage (from 51.2% to 91.9%). And the lowest rates for counseling of pregnant women were in Osh Oblast (from 11.1% to 47.8%). All three Oblasts had low rates of coverage of such topics as "Partners' delivery" (from 11.1% to 51.2%). The importance of this topic has been pointed by specialists of hospital delivery units, as if a partner comes to the delivery untrained/unprepared, training during delivery becomes impossible. Help and support from the partner in such cases, both for the parturient woman and health staff, becomes minimal. In Chui and Osh Oblasts such topic as "Warning signs of pregnancy" had a very low coverage (6.4% and 20% respectively). Though the highest awareness on this topic was demonstrated by parturient and post-partum women, interviewed in Osh Oblast. Almost in all three Oblasts the topic "Plan of Delivery" is the weakest area.
Administration/prescription of Folic acid and Potassium iodide are recommended only during the first trimester of pregnancy. Given the number of women registered for pregnancy follow up before 12 weeks, administration of these drugs was generally satisfactory. The list of additionally prescribed drugs mainly included antibacterial, antifungal drugs, vitamins, and other antispasmodic drugs.

The quality of filling out patient cards was not entirely satisfactory, making it difficult to obtain information on the quality of provided antenatal services. For example, the patient cards were not displayed/plotted on Gravidogramm; dosage was not specified, dates of administration/prescription and cancellation of drugs, in particular iron supplements were not recorded in the cards; there were no records on preliminary assessment of risk group (Talas Oblast); in presence of HIV tests results, some patient cards were lacking informed consent forms signed by pregnant women (most often in Talas and Chui Oblasts), etc.

6.1.4 Recommendations

- Strengthen the work of health staff in relation to: early detection of hypertensive disorders in pregnancy (especially in Chui Oblast); more widely use of Gravidogramm in work/practice;

- Carry out activities to evaluate quality and provide conditions for proper functioning of laboratory and diagnostic services, particularly with regard to diagnostic of proteinuria, bacteriuria, STIs, etc. (especially in Talas and Osh Oblasts);

- Sort out recommendations regarding indications for administering/ prescription, dosage and duration of intake of iron supplements by pregnant women;

- Consistently improve performance on providing information on pregnancy, delivery and newborns care in the form of individual counseling, conversations or in the framework of "Training School for delivery (mothers school)";

- Carry out regular monitoring of the quality of filling out pregnant women management cards at PHC level to get more accurate and complete reflection of provided antenatal care services.

6.2 Perception of quality of care by Parturient and Post-partum Women

6.2.1 General Description of the interviewed women

Total of 57 parturient and post-partum women were interviewed, who stayed in delivery units of the Territorial and Oblast hospitals in the selected Rayons of Osh, Talas and Chui Oblasts. Age wise, of the total number of women, 81,6% were at the age of 18-32 years, at that, women under 22 years of age prevailed in Osh oblast (34,4%), and in Talas and Chui Oblasts two age categories prevailed 18-22 (29,4%) and 28-32 (29,4%). As for educational status, there were 31,6% women with higher education, 63,1% with secondary education, 3,5% with not complete secondary education and 1,8% with no education. Marital status: 57,9% were married women, 42,1% - did not have data on marital status. On average, 35,3% of women were registered for 1st pregnancy follow up with HCO, 35% - for second and third pregnancy management, 15,8% - for 4th pregnancy, and the rest 14,2% of women were followed up for their 5th and over pregnancy.

6.2.2 Interview results

The main purpose of the survey was to obtain opinions of parturient and postpartum women about the services, received by them during antenatal care at PHC level and delivery in the maternity units/departments of hospitals. Much attention was paid to identifying the main barriers to accessing services during pregnancy, including the ability to purchase prescribed drugs, women's awareness on various aspects of pregnancy and delivery, general perception of the quality of provided care. During the interview, women pointed out the following:

- ***Competence of medical personnel.*** Most of the interviewed women got registered for medical follow up before 12 weeks of pregnancy, although there were those who went to see a doctor at later dates (returned from Russia, were away in other oblasts of the country). In the villages, women are seen by FGP doctors, but more often, due to their absence, it is the midwife who manages pregnant women and doctor comes to FAP/FGP once week or even less. In the Rayon centers delivery of care is organized in different ways, in some FMCs pregnant women are mostly managed by FGP doctors and if necessary, they refer women to obgyn at the FMC (if there is one on the staff), in other FMCs - on the contrary, the main management is done by obstetrician-gynecologist, and if necessary, she refers clients to FGP doctor (for prescription, etc.). In almost all the Oblasts, inadequate competence of FAP midwives was an issue; pregnant women do not particularly trust them, they don't conduct sentinel household visits, conversations (e.g., on partnership delivery, free delivery, etc.); if doctor does not come to FAP, then pregnant women go to the Rayon center to see him themselves. Some women expressed their dissatisfaction with the FGP doctors' work ("*... I went to see my FGP doctor only to open the card, and get some referrals, if necessary. She did not ask me about smth in particular, no motivation... so I keep coming to Oblast to see a doctor... It seems to me the practice when obgyn was seeing pregnant women was better… ")*. Despite different levels of competence, pregnant women noted that all the necessary measurements (arterial blood pressure, weight, sizes measurements) and tests were performed by medical personnel on a regular basis. Shortage of other specialists was also pointed out (cardiologist, nephrologist, and others), as when it was necessary, women have to go all the way to Oblast to get their consultations. Almost all women pointed out that hospital level doctors have higher qualification, and give more detailed answers to all their questions.

- ***Accessibility and affordability of lab-diagnostic services at PHC.*** Pregnant women pointed out that they can have CBA and UA performed free of charge virtually in every FGP. These same tests are performed at the Rayon FMC for a certain fee, on average, CBA costs 15-30 Soms (0,3-0,6 USD) and UA - 30-40 Soms (0,6-0,8 USD). In private laboratories the cost of these tests is about 50-60 Soms (1,1-1,3 USD), but their advantage is that the test results can be obtained in 2 hours, which is very convenient, if a woman lives outside of the Rayon center. For such blood tests as RW/HIV, women usually have to go to the Rayon center or they are referred to the AIDS Centers; some women responded that they paid for these tests. Women travel to Rayon or Oblast center to have U.S. examination performed. For ultrasound examinations at FMC, women in different Oblasts paid from 30 to 70 Soms (0,6-1,5 USD), but most often ultrasound machines either do not work or are not available there. In these cases, women have to go to private facilities, where the cost of the ultrasound examination is approximately 100 - 200 Soms (2,1-4,2 USD). Analyses/tests for bacterial inoculation are usually performed at the Oblast level as fee paying services.

- ***Accessibility and affordability of drugs.*** The interviewed women said that they took iodine-containing drugs, folic acid and iron supplements. But there were women, who got registered with a HCO after 12th weeks of pregnancy and drugs were not prescribed to them; one woman said that she has been registered on time, but found out that it was necessary to take these drugs not from her attending physician. The main difficulty, experienced by most of the women was purchasing of drugs for anemia. Different women have different amounts announced: "250 Soms for 20 days» (5,3 UD), «1600 Soms per treatment course» (33,8 USD), etc. Some women were not informed at all of the MHIF Additional Package, some women told that they were denied of the benefit prescription due to the lack of insurance. There was not a single woman among the interviewed respondents, who bought iron supplements at a discounted prescription.

- ***The level of awareness of women about Safe Motherhood issues*** differs between Oblasts. Thus, for example, women in Osh Oblast were more informed about HIV-infection issues, warning pregnancy signs, but had difficulties with responding what specific drugs were prescribed to them and for what conditions. In Talas and Chui Oblasts, some respondents did not know that they had given blood for HIV, RW tests, or knew, but were no information was given to them about the issues that should be covered during pre- and post-test counseling; they were relatively inferior compared to respondents from Osh Oblast in listing warning signs of pregnancy. They were listing the topics covered during pregnancy counseling on nutrition, hygiene of pregnant women, breastfeeding, and partnership delivery with different frequency. As for "School of mothers', many respondents (especially those living in rural areas) have not even heard about them, all of the information was received during the visit of their attending physicians. One woman noted that she attended private "School of preparation for delivery" (100 Soms per session, 2,1 USD).

- ***Conditions for delivery.*** As for hospital services, women reported that they were generally satisfied with the conditions, they liked that "…*it is warm everywhere, the baby is next to you*…", some disadvantages have been associated with the fact that warm water is usually available only in the corridor (at the Rayon level), that there is one toilet per delivery unit and sometimes there is a queue formed. When interviewed, the respondents told that they were counseled on various topics (breastfeeding, risks in the postpartum period and when to seek for hospital care, etc.). About 50-60% of women in the Oblasts said that "... *we do not like the new method of delivery...*", it was perceived by them as *"... I could not deliver for a long time, they did not come to see me ..." "... I was with a relative, but yet I did not feel comfortable; when doctors or nurses are next to you, you feel more confident ... "," ... though the midwife was there, I still had a rupture... " etc.* Though younger parturient were more neutral or were satisfied with everything. At the Rayon level, women were more frequently admitted to the maternity unit of the relevant Territorial hospital, but once they had any risk (e.g. risk of low birth weight baby), they were immediately recommended to go to the Oblast center for delivery. From the information, provided by postpartum women about their delivery experience, it was found out that the higher level of care, the more accepted practice, when a pregnant woman or her relatives prearranged management of delivery with doctors. However, these services are paid for, the following rates were quoted: for Oblast level - from 2,000 to 5,000 Soms (43,3 - 105,7 USD). Additionally, women usually bring gloves, light bulbs, paper towels, liquid soap, tetracycline ointment when coming to the hospital for delivery, and with the expenses for transportation, food, clothing and diapers for the newborns, the total amount comes to about 3,000 Som (63,4 USD).

In general, the interviewed women in all the Oblasts were more satisfied with the quality of care, provided to them during delivery at hospitals, compared to other services, provided to them during antenatal care at PHC level.

6.2.3 Conclusion

One of the important factors determining and influencing the perception of quality, based on the views of respondents, is, above all, the professional/competence level of medical staff. It should be noted that more critical comments were made by older women with experience of giving birth in the past, with higher education and those, who could articulate their needs more clearly.

The level of awareness of women also has a direct link to the professionalism/competence of medical staff, their knowledge of the issue, their ability to give key information patiently and in an accessible way. Thus, discontent with "new method of delivery " is probably associated with lack or shortage of information (during prenatal period) of its advantages, both for mother and the unborn child. It was obvious that most of the deliveries at the Rayon level are not planned and discussed. Thus, one of the respondents with a long spacing/interval between the last two births noted "... *I gave birth to my children on the gynecological chair, and the last child - in a different way, delivery now appears to be different...*". The patient card review/analysis indicated the lowest scores particularly on the topic of "Plan of delivery ". Not enough attention is paid to training of partners too.

During the antenatal period, women bear the costs for laboratory tests, even the basic ones (CBA, UA), which are supposed to be free of charge. It should be noted that according to the Governmental Resolution № 401 as of June 12, 2012, The State Benefits Program (SBP) was amended and expanded. The new version of the SBP exempts pregnant women from any payment for ultrasound. However, the survey revealed that despite the MHIF clarifications, the Governmental Resolution is interpreted differently at the local level. Thus, in some rayons they have started performing ultrasound at no cost, in others, on the contrary, they started to charge 100% payment.

The interview of women has also shown that despite the wide prescription of iron supplements, monitoring of adherence to treatment scheme is quite weak (dosage, number of intakes, duration).

6.2.4 Recommendations

- To pay attention to improvement of education/training quality on such topics as “Partnership delivery” (with involvement of partners) and “Plan of Delivery” during providing individual counseling of pregnant women and sessions at «Mothers’ School»;

- To make provision of full time staff to implement work in «Mothers’ School» to have the opportunity to allocate sufficient time for counseling pregnant women, «hear» their needs and give answers to all their questions;

- To provide improved access to ultrasounds at the Rayon level.

6.3 Factors, impacting Quality of provided Antenatal Care

At the PHC level, managers/heads of FMC, Coordinators in charge of maternal health issues, FGP physicians and obgyns were interviewed. The respondents have specified the following factors as having negative impact on antenatal care quality.

6.3.1 Social –Economic Conditions

- ***Migration of Workers/Labor Migration.*** The level of labor migration, both internal and external, is high across the country, particularly in the southern regions/oblasts. When women, migrating to work in Russia and Kazakhstan, get pregnant, they are usually not observed/managed by doctors due to high cost of health care there, and they try to come back to Kyrgyzstan in the gestation age of 37-38 weeks to deliver. They arrive without documents, virtually with no prenatal care, often with complications.

- ***High level of undiagnosed STIs*** in population, including women of reproductive age. The interviewed experts also attribute this factor to migration. The situation when one spouse is away all the time, high cost of diagnostics and treatment, low level of awareness about the symptoms contribute to increase of the undiagnosed or undertreated STI cases. Respondents noted that the pregnancy, which occurred against the background of a variety of infections (such as Cytomegalovirus, Herpes infection, Gardnerellosis, etc.) leads to increase of the number of abnormalities both in women and newborns (ectopic pregnancy in primipara, frequent miscarriages, stillbirths, “frozen” fetus, intrauterine infections, etc.). Health specialists believe that it is necessary to set work on improvement of population health, preventive examinations in schools, among “organized” (studying) and unorganized youth to identify various diseases of urogenital system.

- ***Lack of registration with the Social Fund*** has been identified as a problem by the respondents in all the selected oblasts, as this factor does account for the limited access of pregnant women to various benefits, for example, under the Additional Drug Package of the Mandatory Health Insurance Fund (HMIF). This happens for the following reasons: (i) due to the limited availability of jobs, women are ready to take any, often poorly paid jobs without formal enrollment and Work Record books/Employment histories. Accordingly, there is no registration in the Social Fund, no contributions from employers or from women; (ii) most of women in the regions are involved in running farms (crops, cattle breeding). However, the Social Fund has usually records of only the plot of land owner, and does not have names of all family members. i.e. at some stage registration is incomplete (either at the level of local public administration / aiyl okmotyu, or at the Social Fund level), so unregistered family members are deprived of the right of access to state benefits; (iii) low level of awareness among the population about the opportunity to acquire social insurance policy, which would give access to benefits even if people are employed in the informal sector.

- ***Lack of social benefits for future mothers.*** Respondents pointed out that future mothers do not receive any social benefits for pregnancy. In addition, these benefits are envisaged by the state; some efforts are made to carry out the work in this direction, but they are not adequately efficient for a variety of reasons, including low awareness of women about such benefits, lack of the required set of documents, lack of responsiveness of government structures and agencies, etc.:

"... every week the Director and local management ask to give them a list, which would deserve attention and help for pregnant women, but then there is no reaction and actions ...."

(excerpt from the interview)

- ***Underestimation of importance of the basics of good nutrition among population.*** Respondents in all selected Oblasts pointed out low standard of living of population, which does not allow them to have balanced nutrition, which should include adequate amounts of protein and vitamins for family, including pregnant woman. At the same time, almost all families grow a wide range of fruits and vegetables in their farms, produce many kinds of meat and dairy products, but most of them are for sale to generate revenue. At that, families (even more or less wealthy) continue to have monotonous nutrition, eating less healthy foods (pasta, bread, etc.). It should be admitted that no work is implemented to inform and promote the general basics of good nutrition in the population, in order to accentuate the importance of proper nutrition and develop the ability to make a balanced diet based on the existing set of products.

- ***Increase in the number of early marriages.*** Increase in the number of early marriages was observed in the regions during the last 2-3 years (at the age of 15-16 years). In the opinion of the respondents, the girls' parents believe it to be more profitable to arrange marriage for the girl at early age (no need to spend money for her further education, food and no need to worry about her future destiny). Under this scenario, young woman is extremely dependent on her husband, in-laws, and can't make her own decisions about her health and expenditures, associated with health care. In addition, there are no conditions in the regions for labor sparing regimen for pregnant women, so almost all women continue to work in the fields or to take part in cattle breeding, and heavy loads affect the normal course of pregnancy, contribute to miscarriages or premature births.

6.3.2 Health care System and its Functioning

Health Human Resources

- ***Staffing and its impact on practice.*** A serious shortage of FGP doctors leads to their large work load, both in the area of seeing patients and filling out all required medical documentation (clinical cards, prescriptions, record books, clinical information forms (CIFs), etc.).

"... We have been working following "Family Medicine" principle during 1998 – 2005, and for the last seven years we are working as feldshers due to a large work load ...

(Excerpt from an interview)

"... They only say that primary health care is a priority, but in reality this is not true..."

(Excerpt from an interview)

Almost all the interviewed FGP doctors said that due to big lines/queues, they did not have possibility to spend enough time for talking/counseling with pregnant women. In addition, since the percentage of young and inexperienced mothers is high, health workers have to come back/repeat some topics several times to make sure that clients perceived information in a right way. The respondents pointed out that the revised clinical protocols facilitate their practice significantly, but at the same time, they were concerned that there are no mandatory visits of women to HCOs just prior to delivery *("...clinical protocol does not indicate mandatory visits after 36 weeks of pregnancy, and what to do with edema and blood pressure? Visits should be*

more frequent…", excerpt from an interview). Also many respondents (those who used to be physicians or pediatricians by specialty in the past) believe that a gynecologist should be available at PHC level by all means, because sometimes it is very difficult for them to handle and understand various types of obstetric and gynecological pathologies. There is either a shortage or lack of obstetrician-gynecologists at the level of FMCs. Low staffing of cadre is complicated by turnover of more or less trained personnel.

"... For example, young doctors leave to work in the pharmacological company, as they are paid 15-20 thousand Soms (317,1 - 422,8 USD), and an experienced doctor gets 10-12 thousand Soms (211,4 - 253,7 USD). Now 1.7 coefficient for serving catchment area and rural coefficient have been cancelled... "
(Excerpt from an interview)

- ***Weak motivation for training***. The respondents pointed out that not all FGP doctors were covered with training on antenatal care, and the main focus was given to former obstetrician-gynecologists (especially in Osh Oblast). The respondents (of those responsible for maternal health) expressed their opinion that there is no particular motivation system for continuous education/training and self-training at primary health care level. For example, "... *money does not follow the patient, so there is no incentive to exert more efforts...", "... FGP doctors go through attestation on a regular basis, but out of 1000 questions, there are few questions on obstetrics, and as a result, qualification/competence is lost ...*". In addition, "... *family doctors are not given vouchers for retraining courses in obstetrics-gynecology, and it is impossible for them to get training leaving their jobs for the training period, as they have a heavy work load ...*".

- ***Training activities: Quality and Post training Monitoring.*** Enough trainings are conducted for FGP doctors and nurses, but, according to the respondents (of the Coordinators/Focal points in charge of maternal health) "... they all know that there are no practical skills...". Many respondents praised the initiative of the FGP Association (FGPA) on continuous quality improvement (CQI), which was implemented in 2009 - 2011. The work implied training of doctors and medical nurses, providing informational booklets on nutrition, warning signs during pregnancy, etc., as well as a regular, quarterly monitoring of activities. This approach in particular enabled to improve performance significantly.

Access and Quality of certain types of health services

- ***Laboratory-diagnostic services.*** Respondents expressed concern about the low-skilled lab technicians at PHC level, because it happened a few times, that the results of the same analyzes carried out by the FMC and other laboratories (in a hospital or private labs) were completely different ("... *errors are noted in diagnostic of anemia, presence of protein in the urine is not shown... ", excerpt from the interview*). Besides, FGP doctors noted that quite often ultrasound machines do not work at the FMC, and pregnant women have to go to private health care facilities for screening. The quality of ultrasound examination also should be monitored. The respondents pointed out the importance of access to ultrasound and other tests at prenatal stage for early diagnostic of various congenital abnormalities of the fetus (e.g., brain, intestines, etc.) in order to prevent birth of children with congenital deformities.

- ***Access of benefits within the MHIF Additional/Supplementary Drug Package for pregnant women.*** Responsibility to determine the insurance status of clients lies with FGP doctors, which, in the opinion of the interviewed doctors, it is not correct.

"... The definition of insurance status also hangs on the doctors' necks, this responsibility should be passed to the Passport offices, Social Fund, Ministry of Social Security ..."
(Excerpt from interview)

- Respondents generally raised the issue that not all patients can afford to take full course of iron supplements for anemia treatment due to their high cost. The percentage of uninsured women is quite high (up to 40-50% in the Oblasts) and that does not enable them to take advantage of the benefits under the MHIF Additional /Supplementary Package. Some doctors felt that iron supplements should be "... *given for free as humanitarian assistance to all clients, regardless of the availability of documents. Woman has to be motivated – like "…if you miss a visit to HCO – you won't get your benefit for example ... "*
(Excerpt from interview)

- ***Low coverage and quality of "School of mothers."*** In accordance with the MOH Decree № 117 dated 19.03.2012, "Schools for preparation for deliveries" were opened at FMCs everywhere. For this purpose, usually one office is assigned, which is equipped from different sources (international organizations, such as UNFPA in Talas Oblast, etc., or at the expense of health care organizations themselves) in different Oblasts. The list of equipment includes furniture, carpets, balloons, information materials, VCR in some cases. Usually midwife, obstetrician-gynecologist or FGP doctor is responsible for the activities of these schools. The school training program includes six sessions, during which pregnant woman and her partner are provided with all necessary information about pregnancy, delivery and postpartum period. Respondents pointed out the following problems in the work of Mothers' School:

(i) This work is done as part-time job either by FGP doctors or paramedical personnel in some FMCs due to staff shortages. In this case, specialists do not have enough time to provide training in full degree, so they simply give informational material to clients for self-study;
(ii) Specialists pointed out shortage of educational informational materials;
(iii) Mothers' schools are usually opened in FMCs, i.e. in Rayon/district center and are not accessible for the majority of women, living outside the district center. During the interview, some patients reported that they heard about this school, but have not had the opportunity to attend school because of remoteness;
(iv) The level of coverage with training/education of patients remains low, conversations/counseling of women are carried upon demand; even those, who live in the rayon/district center don't show up;

Experts were unanimous, saying that the quality of schools' work requires more significant improvement.

Work with Population on Health Issues

- ***Necessity of preventive screenings/examinations.*** FGP doctors and obgyns at PHC level emphasize the importance of taking measures to improve the health of population, as many pregnancy complications and deaths occur against the background of concomitant diseases

(inflammatory diseases of the urogenital area, infectious diseases, etc.). They believe that prevention activities should be started at secondary schools.

"... recently we carried out medical examination of schoolgirls of 10-11 grades, and detected Pyelonephritis in 6 girls out of 26 examined girls; menstrual disorders, and inflammatory diseases of the female organs were detected in 7 girls ..."
(Excerpt from an interview)

- ***Underestimation of population of safe motherhood importance,*** as evidenced by the low support of pregnant women by Ail Okmotyu (local authorities), family and society in general.

"... They die mostly from poor families, who live in the mountains, in cold conditions, or do not live at the addresses of official registration, never were registered with HCOs for pregnancy medical follow up, no adequate nutrition of pregnant women and virtually no meat in the diet, and they deliver till they give birth to a boy ..."
(Excerpt from interview)

"... In summer women are engaged in field work, they care about health in fall. Hospitalizations for gynecological reasons have seasonality ... "
(Excerpt from interview)

Opinions were expressed about necessity to raise general awareness of population. In addition, for dissemination of information on safe motherhood- it was suggested to use promotional splash/ads on television ("... *instead of pictures with nature* ..."), to strengthen continuity of work between FGP, Heath Promotion Units (HPU) and Village Health Committees (VHC), to support HPUs and VHCs and to work through them with population on maternal health issues.

6.3.3 Conclusions

Thus, the interviewed respondents said that one of the major factors having a significant impact on the quality of antenatal services at PHC level, is staffing with cadre (FGP doctors, obgyns, paramedical personnel), who should be adequately trained, motivated, whose activities should be constantly monitored on the basis of certain indicators. It should be noted that most of the respondents from FGP doctors were health workers of retirement or close to retirement ages, and it looks like the current situation does not have much capacity as far as further improvement of quality of services is concerned, both in the area of medical and social issues, for the following reasons: (i) most of physicians, regardless of presence or absence of incentives are already working under maximum work load *("... I am very sick myself, but can't take sickness leave, as I receive/see patients all day through, and after the working hours I get the drips myself ..." excerpt from the interview)*, (ii) others have formed a very formal approach to their duties, firmly believing that only obstetrician-gynecologists should handle the issues of maternal health, that there is no motivation to upgrade skills through training (do not remember the dates and topics of trainings, which were held in the current year, though they attended them.) Some respondents, interviewed in Osh Oblast, saw reserve capacity in involving more medical nurses *("... we have enough medical nurses, the knowledge level is different, so they have to be hired on a competitive basis and certified/attested once a year ...")*. According to the respondents, there is no influx of young doctors, so mechanisms to attract young cadre should be revised and improved.

PHC specialists use very basic laboratory tests (GBA. UA), but their quality is not up to a standard due to low competence of lab technicians. Ultrasound diagnostic facilities remain underutilized (in terms of detection of intrauterine pathology); doctors also are concerned by low affordability of laboratory services on diagnostic of sexually transmitted infections for population (e.g., the cost of diagnostic of four most common STIs is 1000 Soms (21,1 USD).

One of the key objectives of Antenatal care program is provision of all necessary information to pregnant women, so that they could take part in making decisions related to safe pregnancy and safe delivery. The survey/review results indicate that a lot has still to be done in this direction. As some respondents confessed, "... *Mothers' schools are open, but their opening in many health care organizations is just formal..." (excerpt from interview*). Almost all of the selected health institutions had specially allocated offices/premises for "Mothers' Schools", the level of equipment was different, but not once the surveyors had a chance to see the "School" in action, that is, either the facility was locked and it was unlocked for the surveyors to show the equipment, or the person in charge was not available, or the person in charge (doctor, nurse) was describing how they work; sometimes their approaches towards educational work were forced and not always were of adequate quality (e.g., "... *Here we have informational educational material, posters, we put them on the wall, when a pregnant woman comes, she reads them herself, because I don't have time to converse with her ... ", excerpt from an interview*). It goes without saying that additional resources should be involved/engaged in communication with population and information on safe motherhood should be provided to pregnant women and general public, additional personnel with prior training should be attracted widely (VHCs, students of higher medical institutes and colleges, volunteers, etc.) and information sources should be engaged widely as well (media, etc.).

6.3.4 Recommendations

- Work out mechanisms on additional engagement of doctors and medial nurses for PHC in the Oblasts, probably purposefully for maternal health issues;

- Work out mechanisms on wider use of the current capacity of paramedical personnel trough expansion of their job description in regards to maternal health (sentinel household visits, counseling, partially– assistance in addressing social issues, etc.);

- Ensure full coverage of PHC specialists (regardless of the former specialty) with training on efficient antenatal care with subsequent regular monitoring of their activity;

- Carry out selective comparison assessment of the basic tests' results (CBA, UA, etc.), performed by labs, located on the same territory (e.g. in Rayon FMC and TH, and private labs) to detect /confirm the reasons for the mentioned discrepancy of results. To provide skills upgrading course for PHC lab technicians if necessary;

- Initiate work among the relevant structures (Ail Okmotyu, MHIF, Social Fund, etc.) and population on ensuring maximal complete registration of women in the Social Fund by Oblasts to provide them with further access to the state benefits;

- Consider the possibility to provide targeted aid to pregnant women from low income families in the form of free iron supplements for the entire pregnancy period;

- Work out the strategy on expansion of information communication campaigns on safe motherhood among pregnant women, their families and general population.

CHAPTER 7. RESULTS OF EVALUATION OF SERVICES, PROVIDED DURING DELIVERY

Managers of HCOs, Heads and physicians of delivery units/departments were interviewed at the level of Territorial and Oblast Hospitals. During the interview, the respondents pointed out considerable positive changes, which occurred through implementation of «Efficient Perinatal Care» Program (EPC) (7.1.). But the factors still remain which hinder further improvement of quality of care during deliveries (7.2.).

7.1 Main changes, implemented under the "Efficient Perinatal Care" Program

During the recent years significant improvements of infrastructure have occurred: opening and repair of new delivery rooms, replacement of windows and insulation, opening of Intensive Care Units. Attention was paid to improving water supply in the units and wards; organizations address the issue of water supply in different ways, mostly - in part (for example, water is supplied only for 2 hours a day, or cold water is supplied, but hot water is available only in 1-2 points in the department). To ensure the required temperature in the unit and wards, additional heaters were purchased, as well as air conditioners, water heaters and showers. The units' equipment was significantly upgraded at the expense of various organizations (UNFPA, UNICEF, Japanese grant, KFW, GTZ, UNIHELP, and at the expense of health care organizations, etc.), but not in all organizations: anesthesia machines, oxygen concentrators, heaters for newborns, incubators, pumps, operating tables have been installed.

The practice of delivery management has also changed: such approaches as partnership labor, free labor, "clean hand", active management of the third period have been introduced, neonatal resuscitation has been improved. The number of different complications, such as mastitis and other septic complications has reduced. Training and education is actively conducted in the units on relevant topics both for health staff, including obstetrician-gynecologists, neonatologists, midwives, and parturient women. Respondents noted that responsibility of midwives has significantly increased. In addition, regular audits of quality of filling out case histories are conducted at the unit/department, as well as performance reviews and linking them to the labor participation index (LPI). Important role in the occurred changes was attributed by the respondents to regular reviews of maternal mortality cases and critical cases in obstetrics, which have educational element/nature, help to understand the challenges of maternity departments better and further contribute to their solution with the full support of the organization management.

7.2 Factors, impacting on the quality of provided care during deliveries at hospitals level

7.2.1 Organization of health care

- ***Poor Infrastructure***. Despite the significant improvements, poor infrastructure remains to be the most discussed topic of the respondents. The bulk of the respondents pointed out the lack of space/premises (large number of beds in the ward) as one of the major problems, then lack of repair for a long time, worn out equipment, including breathing apparatus and instruments; not all the old beds were replaced in wards, no functional beds, etc.

- ***Problem of technical service/maintenance of equipment.*** Many managers have noted the problem of equipment maintenance, which is connected to non-functioning of the system, lack of specialists in the regions, and absence of earmarked funds allocated in the budget of HCOs for maintenance of equipment.

- ***Weak provision of intensive care services*** was rated by respondents as weak, they pointed out that there is no specialized intensive care for delivery, no monitors, very weak lab, which does not enable to perform all necessary biochemical tests with required periodicity 24 hours a day (due to shortage of personnel, reagents, etc.). Besides, skills upgrading in the area of intensive care is required for nurses and midwives.

- ***Blood bank.*** In 2009-2010, the blood transfusion units were closed at the territorial hospitals due to difficulties with maintenance and safety of blood. To date, there is a problem with availability of blood and blood products, which would allow avoiding the loss of time in urgent need of blood transfusions. Only large hospitals with sufficient budget can afford such blood bank, as these products are expensive (cost per one woman only could be up to 15,000 Soms, 317,1 USD). Other hospitals have to turn to nearby hospitals asking for blood products in case of emergency, or go to the Oblast center. Respondents expressed the opinion that it was necessary to develop hemo-transfusion service with conditions for storage of tested, safe blood and blood products, and with capacity to provide operational support within the service area (one ambulance vehicle and special Blood Transfusion team). Also, they talk about the lack of donors.

- ***Regionalization.*** In early 2012, the Ministry of Health issued the Decree according to which pregnant women with a certain list of conditions or complications should be referred to maternity units of hospitals of higher/above level (Oblast, national). Some respondents expressed the view that the Decree is somewhat premature and its implementation still requires a lot of preparatory work: improving the infrastructure of Oblast maternity units (equipping wards and delivery rooms, staffing by trained personnel, etc.), establishment of referral system on the whole. Today, the situations occur quite often, when maternity units at the Oblast level are crowded *("... they give birth to premature babies, it is impossible to discharge them...", excerpt from interview).*

- ***Shortage of transportation to deliver women from Rayons to Oblast level*** is also one of the topical challenges and barriers for implementation of the Decree on Regionalization. The available transport is old, breaks down quite frequently. Besides, there are challenges with regular fuel supply to make field trips to Rayons, and in cases when women are not transportable (for example, after surgeries, etc.).

- ***PHC activity including Family Planning Units.*** The main problem, pointed out by doctors, was the fact that a significant percentage of women are admitted to hospitals without pregnant women patient cards, or they are admitted under-examined. Respondents pointed out the necessity to strengthen the work of Family Planning units, the Center for Human Reproduction and screening during early antenatal period to reduce pregnancies with a known high risk.

«…Why risk group women deliver every year?»
«…There is no Family Planning, pregnancy occur incidentally against the background of low health index, women are not prepared for pregnancy …»

«…Many concomitant pathologies, women with cardio-vascular diseases, TB, rheumatic processes, in the past such women were given contraindications and were not allowed to deliver … they excluded the role of premorbidity background…»

(excerpt from interview)

Also, according to the respondents, qualification/competence of FAP staff is very weak, "... *they keep women for 10-12 hours, and only then they refer them*...". Hospital specialists are well aware of the situation at the level of primary health care ("... *FGP doctors are victims, they are the scapegoats*..."), and therefore believe that PHC specialists don't see and don't take into account all the problems, and coordination of delivery /provision of care should be left with the hospital.

7.2.2 Health Human Resources

- ***Shortage of cadre.*** Shortage of obstetrician-gynecologists and neonatologists was pointed out. 1 - 2 doctors work in some maternity/ delivery units, more often working on 1,5 rates, having 10-12 night shifts per month, and are required to provide urgent care 15 days per month (this work is paid only for the actual hours), they can't take annual leave or be absent from their jobs in Rayons. Respondents consider this to be a problem, as maternal deaths review on several occasions revealed that the lack of medical personnel is not of a minor role. It is the staff shortage that has a negative impact on further medical follow up, after postpartum women are discharged home.

- ***Competence/qualification of practicing doctors and medical nurses***. Most of the respondents spoke out the need for upgrading skills of obgyns ("*... of the total number of practicing obstetrician-gynecologists, few can perform surgeries, many of them don't have such skills* .."). Wishes were expressed to improve the standard/level of training curricula/programs, respondents prefer to get on hands training, in real situations with quarterly monitoring. Or, if possible, in Bishkek and abroad (Russia, etc.) to gain real new knowledge and skills.

- ***Quality of higher and secondary medical education.*** It was probably for the first time that interviewed experts spoke out and were unanimous in saying that the quality of training of young doctors (especially at the Medical Faculty of Osh State University) is extremely poor/low, graduates have no practical skills, there are problems with ethics and deontology ("*... there is no knowledge, no responsibility, no fear for the patient, they do not ask questions..*"). Supervision, conducted against the background of lack of fundamental knowledge, yields very modest results. The respondents were of the view that a more rigid selection should be applied for enrolment to medical educational institutions ("*... medical school should be exclusive, and only those with the best capabilities should be enrolled...*"). The same applies to the graduates of medical colleges. As it was noted, nurses are trained in excessive amounts; knowledge and skills are poor, in addition, high turnover has been observed among them. Proposal was expressed to hire only the best, selected nurses trough competition from the total number of nurses, and work with them on the basis of one year Contract.

- ***Protection of Doctors' rights.*** The Interviewed experts believe that study of laws should be incorporated into the curriculum of medical educational institutions, and legal aspects should be taught at medical educational institutions. Such knowledge is needed as more and more disputes arise in the relationship between "doctor and patient" (for example, when parents

object to vaccination of their children, recommendations to terminate pregnancy under detection of intrauterine fetal abnormalities, etc.). In addition, the new article, stipulated in the Criminal Code as "unprofessional execution of duties" allows a broad interpretation of the situation in some cases. The general opinion was expressed that medical staff don't have anyone to protect them, and the "Association of Gynecologists" has not taken over this responsibility either.

7.2.3 Conclusion

Denoting the significant progress of the "Efficient Perinatal Care" program implementation, achieved during the last few years, the interviewed specialists admitted that in terms of Obstetrics and Gynecology, a lot has still to be done.

If at PHC level, a significant proportion of factors fall onto the aspects beyond or outside health sector (social and economic conditions), then at the level of hospital services these aspects were presented by more systemic factors, and at that, their solving requires sufficient financial investments, both in infrastructure and in training of personnel.

Regionalization is one of the areas, which is currently being developed and implemented by specialists at all levels. Clearly a balanced approach should be applied with strengthening of both maternity/delivery units/hospitals at Oblast level, and maternity departments at Rayon level.

There is a great need to involve additional cadre/human resources (obstetrician-gynecologists, midwives), to train specialists working in the departments, especially as far as acquiring of practical skills is concerned, including free provision of emergency obstetric care. As for the format for training, specialists believe that the following two forms of training will be the most efficient: (i) on job training with quarterly monitoring of practice, and (ii) training courses in Bishkek, or in the near / far abroad for exposure to higher standards of care.

The interviewed specialists are greatly concerned about the level of training of medical educational institutions' graduates (especially at the Medical Faculty of the Osh State University) and medical colleges.

7.2.4 Recommendations

- Further implementation of activities, envisaged by the MOH Decree on Regionalization, including infrastructure improvement and adequate provision with transport;

- Consider possibilities to supply maternity departments of the Territorial Hospitals with blood and blood products;

- Ensure full coverage of maternity departments' specialists with training on efficient management during delivery, including provision of emergency obstetric care, with subsequent regular monitoring of their activity;

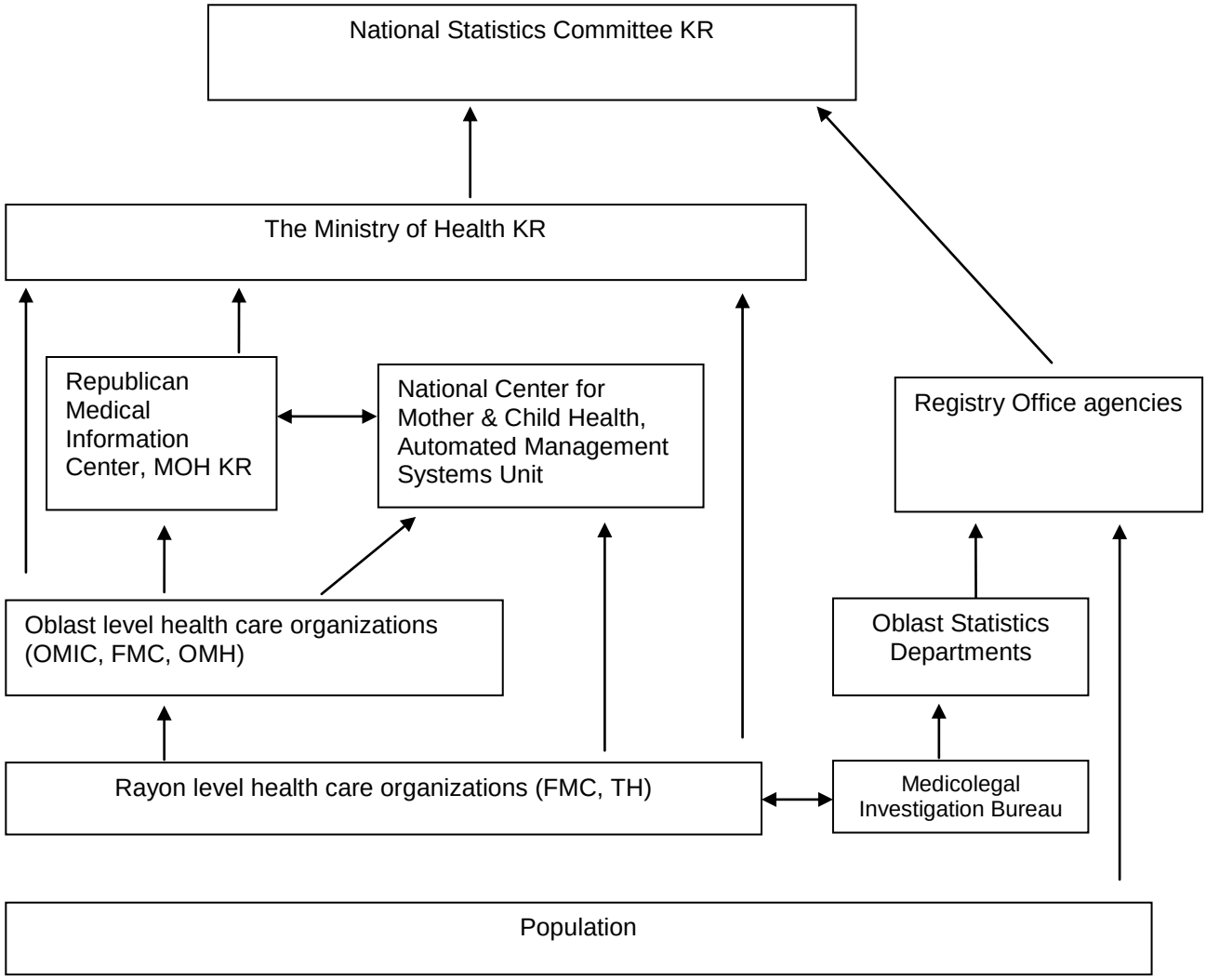
- Conduct assessment of organization of training/educational process and evaluation of training quality of interns and clinical residents on specialty «Obstetrics and Gynecology» aimed at their further improvement;

- Consider possibilities to introduce enrollment of paramedical personnel trough competitive selection with subsequent contracting for one year;

- Improve performance of Family Planning Units at PHC level and increase coverage of reproductive-age women by contraceptives.

ANNEX 1. Information flows on Maternal Mortality

(According to the Decree of the KR MoH № 330 as of 24.06.2011 "On improvement of completeness of maternal deaths registration, timely notification of appropriate authorities and reliability of maternal mortality ratio").



Order of information and accounting/reporting forms submission

Data on women deceased as a result of complications related to pregnancy, birth and postnatal period are submitted to Mother & Child Health Unit of MOH KR and Automated Management Systems Unit of National Center for Mother & Child Health – **within 24 hours by phone**;

1. Form № 102-1/y – "Signal birth certificate of a pregnant, parturient and puerperant woman" is filled up by all health care organizations – **within 3 days after death**;
2. Reporting Form № 21 – "Data on maternal mortality" is filled up by oblast health care organizations – **monthly before the 5th date following the reporting period**;
3. Medical documentation (Form 096/y – "Individual card of a pregnant and puerperant woman", Form 111/y – "Birth history") is submitted to Oblast Coordinators on Obstetrics and Gynecology – within 6 days and to Automated Management Systems Unit of National Center for Mother & Child Health **– within 10 days**;
4. Medical death certificate is filled up by health care organizations for provision for relatives; the copy is submitted to Registry Office agencies.

ANNEX 2. Maternal Mortality Ratio, KR, 1990 – 2011, persons / per 100 000 live births

Year Region	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Kyrgyz Republic	81 62,9	72 55,6	64 49,9	52 44,5	47 42,7	52 44,3	34 31,5	64 62,7	35 33,6	44 42,3	44 45,5	43 43,8	54 53,5	52 49,3	56 50,9	66 60,1	67 55,5	64 51,9	70 55,0	86 63,5	75 51,3	82 54,8
Batken	- -	- -	- -	- -	- -	- -	2 18,8	1 9,8	1 10,3	2 19,6	3 32,1	3 31,3	4 45, 6	3 32,5	4 44,4	4 42,4	4 38,5	8 74,8	7 66,6	5 41,7	8 59,7	9
Jalalabad	18	9 32,7	8 29,2	20 78,9	10 39,7	9 33,5	6 25,5	7 30,4	7 29,6	13 57,4	10 48,6	9 42,4	13 59,0	13 59,3	15 64,3	17 73,5	20 82,5	8 32,8	17 66,6	11 40,3	9 31,1	11
Issyk-Kul	9	9 75,3	6 51,8	5 46,6	5 53,9	5 50,5	1 11,2	12 145,4	3 35,8	5 58,4	5 59,9	3 35,0	6 69,9	5 54,5	5 50,6	8 87,0	9 91,4	9 89,7	13 123	8 72,0	8 70,4	7
Naryn	6	8 97,9	6 67,0	4 48,8	9 126,8	5 74,2	4 67,2	5 84,9	6 98,2	4 58,5	2 32,4	9 145,5	5 72,5	3 43,9	6 89,4	6 89,6	4 60,5	4 62,3	3 46,2	7 106,0	5 69,6	6
Osh	24	23 48,7	22 45,7	10 22,3	8 18,8	13 27,2	10 30,2	16 51,3	12 38,6	5 20,0	7 31,0	10 44,5	9 39,6	6 25,3	9 37,5	16 66,0	17 64,6	7 26,0	15 54,4	27 93,2	25 78,6	21
Talas	3	7 106,9	4 63,8	1 17,1	1 18,9	2 37,5	1 20,7	2 44,8	1 20,3	2 40,9	2 43,3	2 40,0	6 113,1	6 104,1	6 107,1	5 94,8	2 33,8	7 120,3	3 51,1	4 61,3	6 87,0	3
Chui	16	10 58,1	15 94,1	8 59,0	3 23,2	6 45,2	3 24,3	6 54,0	3 27,5	4 35,3	7 64,0	4 37,5	5 44,2	11 88,7	6 45,6	6 47,5	7 42,7	13 78,3	6 34,4	11 61,1	10 49,5	14
Bishkek city	5	6 55,4	3 29,7	4 48,9	11 140,6	12 160,2	7 80,6	15 189,2	2 21,2	5 51,2	7 69,6	2 19,3	2 17,5	4 32,7	3 21,5	213, 5	3 18,3	3 17,3	4 22,0	4 20,4	4 19,4	9
Osh city	- -	- -	- -	- -	- -	- -	- -	- -	- -	4 82,9	1 24,3	1 24,5	4 95,4	1 23,9	2 47,3	2 44,8	1 21,5	5 100,6	2 38,6	9 168,0	- -	2

Source: National Statistics Committee of the KR

ANNEX 3. Maternal Mortality Ratio, KR, 1990 – 2010, per 100 000 live births, in urban and rural areas

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Kyrgyz Republic	**62,9**	**55,6**	**49,9**	**44,5**	**42,7**	**44,3**	**31,5**	**62,7**	**33,6**	**42,3**	**45,5**	**43,8**	**53,5**	**49,3**	**50,9**	**60,1**	**55,5**	**51,9**	**55,0**	**63,5**	**51,3**
Urban	66,8	79,8	56,2	48,3	71,6	69,8	52,3	104,2	42,1	45,9	60,3	35,1	43,1	34,5	40,1	47,8	43,1	36,2	43,2	42,6	32,1
Rural	61,3	45,7	47,4	43,2	32,2	35,5	24,0	48,6	30,4	40,9	39,4	47,4	57,9	55,7	56,5	66,0	61,5	59,9	61,2	74,5	61,3