HEALTH POLICY ANALYSIS CENTER

Rapid Assessment of Clinical Sites for Postgraduate Medical Education in Bishkek and Osh

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List of Abbreviations

AsMI	Asian Medical Institute
BRCT&O	Bishkek Research Center of Traumatology and Orthopedics
CCH	City Clinical Hospital
CChCHEC	City Children's Clinical Hospital of Emergency Care
CGH	City Gynecological Hospital
CMH	Clinical Maternity Home
CPC	City Perinatal Center
CR	Clinical Resident
CS	Clinical Site
CT	Computer Tomography
ECG	Electrocardiogram
FMC	Family Medicine Center
GP	General Practitioner
GR of the KR	Government Resolution of the Kyrgyz Republic
HEI	Higher Education Institution
HO	Health Organization
IHMS	International Higher Medicine School
JaSU	Jalal-Abad State University
KSMA	Kyrgyz State Medical Academy
KSMIRCME	Kyrgyz State Medical Institute of Retraining and Continuing Medical Education
KRCB&RT	Kyrgyz Research Institute of Balneology and Rehabilitation Treatment
KRSU	Kyrgyz Russian Slavic University
LRA	Legislative and Regulatory Acts
MC	Medical Center
MoE&S	Ministry of Education and Science
MoH of the KR	Ministry of Health of the Kyrgyz Republic
NCC&T	National Center of Cardiology and Therapy
NCMCH	National Center of Mother and Child Health

NCO&H	National Center of Oncology and Hematology
NCPh	National Center of Phthisiology
NCS	National Center of Surgery
NH	National Hospital
ODD	Outpatient-Diagnostic Department
OICH	Osh Interregional Clinical Hospital
OIChH	Osh Interregional Children's Hospital
OMH	Oblast Merged Hospital
OshSU	Osh State University
PGME	Postgraduate Medical Education
PHC	Primary Health Care
RCD	Republican Center of Dermatovenereology
RCHS&OT	Research Center of Heart Surgery and Organ Transplantation
RCHR	Republican Center of Human Reproduction
RCMH	Republican Center of Mental Health
RCIDH	Republican Clinical Infectious Diseases Hospital
SB KSMIRCME	Southern Branch of the Kyrgyz State Medical Institute of Retraining and Continuing Medical Education
SRCVSC	Southern Regional Cardiovascular Surgery Center
TH	Territorial Hospital
USE	Ultrasound Examination

1. Introduction

The Strategy for Development of Postgraduate and Continuing Medical Education in the Kyrgyz Republic for 2014-2020 was adopted in accordance with the National Health Care Reform Program “Den Sooluk” for 2012-2018 which reflects the main development areas, changes and steps to streamline and improve the quality of postgraduate and continuing medical education.

The postgraduate and continuing medical education reform is a consistent step associated with transformations in pregraduate education. Over the years of reforms (since 2008), some activities have been carried in medical education with support of the Swiss Embassy in the Kyrgyz Republic and assistance by experts of the Medical Faculty of University of Geneva and the Geneva University Hospital.

Particularly, state educational standards have been developed, and a main focus in implementation of these standards has been made on the specifics of general practitioners (GPs) training. The curriculum and teaching methods are being revised. Currently, students of the KSMA from Year 1 to Year 6 are taught based on newly developed curricula; and the first graduation within the framework of the new curricula implementation is expected in 2018. It is expected that various medical education institutions will graduate around 1500 graduates in total. According to the PGME Regulation all these graduates have to take 2-year residency in general practice.

Earlier this year an assessment of regional clinical sites’ capacities was carried out as part of the postgraduate medical education decentralization to the oblast and raion levels. The assessment showed that most of the raion THs and FMCs potentially could be clinical sites under condition of relevant HO’s capacity-building in terms of e-learning and clinical supervision.

However, the majority of residents and interns stay in HOs of Bishkek and Osh. In these cities, number of residents should be limited so that to ensure an adequate access to practical training. In this regard, it is required to explore the existing situation in HOs of Bishkek and Osh in terms of number of clinical residents and access to practical training.

2. Goal and objectives

2.1. Goal

To identify the number of clinical residents in health organizations of Bishkek and Osh which are clinical sites for medical universities and to assess their access to adequate practical training and patients.

2.2. Objectives

- Analyze data of medical universities and HOs on the number of residents by specialty in health organizations which are clinical sites;

- Analyze statistics on key indicators of health organizations in Bishkek and Osh based on the research tool;

- Evaluate practical training of residents by chosen specialty based on interviews with clinical supervisors and residents;

- Identify the potential number of residents to be accepted by HOs of Bishkek and Osh based on the selected criteria

3. Methodology

To achieve these objectives the following steps have been consistently taken:

3.1. Collection of information on clinical sites where residents do training and on their number in health organizations of Bishkek and Osh:

- based on requests to medical universities;

- based on data from clinical chairs and HOs that are clinical sites;

- analysis and interpretation of the received data on clinical sites and residents;

3.2. Collection of data on indicators and infrastructure of health organizations that are clinical sites:

- Number of beds;

- Number of hospitalizations and outpatient-diagnostic visits by specialty (therapy, surgery, maternity, pediatric etc.);

- Total number of outpatient visits and visits by PHC doctor (FMC in Bishkek);

- Number of working doctors by specialty.

3.3. Determination of the estimated number of residents based on the criteria selected.

3.4. Interviewing clinical supervisors, directors of HOs and residents in order to assess the capacity of clinical sites, number of clinical residents, learning environment, access to patients, list of manipulations performed by residents, possibilities to provide wages, contractual relations between universities and health organizations.

As the assessment didn't involve an assessment of approved programs for obtaining practical skills and manipulations, the list of practical skills and manipulations included in the report as those that are acquired by residents has been determined on the basis of interviews with HO managers, clinical managers and residents.

3.5. Sampling

The sample included all republican, oblast HOs and city health organizations located in Bishkek and Osh which have residents of medical universities (KSMA, KRSU, KSMIRCME, IHMS, AsMI, OshSU, JaSU, KSMIRCME – southern branch).

As part of the assessment, 32 health organizations providing postgraduate training were visited in Bishkek and Osh. Managers of HOs, chiefs of chairs located in HOs, clinical supervisors and residents were interviewed in all visited health organizations.

Table 3.5.1. Number of organizations visited

Health Organizations	Site visits
Republican HOs located in Bishkek	12
City HOs in Bishkek	10
Oblast HOs located in Osh	5
City HOs in Osh	3
Private clinics	2
Total HOs	**32**

3.6. Determination of the estimated number of residents

Key criteria for the learning process involved the following: optimal load for each resident - permanent management of 10 patients in hospitals and outpatient reception of 12 and more patients per day in an outpatient-diagnostic department or in FMC.

To ensure this minimum load per one resident a health organization should have:

- 360 hospitalizations per year (with ALOS (average length of stay) of 10 days)

- 320 visits per month in the outpatient-diagnostic department of a hospital or at the PHC level (or 3840 visits per year).

Based on these standards the estimated number of residents was determined using the following formula:

$$\frac{\textit{Total number of hospitalizations/deliveries/visits per year}}{\textit{Standard per 1 resident}} = \textit{Maximum number of residents which may be accepted by a HO with ensured appropriate load}$$

Since supervision of residents at clinical sites is ensured by clinical chairs located in health organizations which have a sufficient capacity of the higher-education teaching personnel and all HOs in Bishkek and Osh have the staff of doctors, determination of the estimated number of residents didn't consider the availability of doctors for clinical supervision.

4. Assessment Findings

4.1. Organizations providing postgraduate training

Currently, postgraduate training is provided by 7 medical universities – KSMA, KRSU, KSMIRCME, Southern Branch of the KSMIRCME, OshSU, AsMI, IHMS, 4 National Centers – NCC&T, NCMCH, NCS, NCO&H and 4 Research Centers – BRCT&O, RCHS&OT, SRCVSC and KRCB&RT.

These organizations have a license of the Ministry of Education and Science of the Kyrgyz Republic to implement the clinical residency programs in various specialties.

Table 4.1.1. Postgraduate Training Organizations

Higher Education Institutions	National Centers	Research Centers
KSMA	NCC&T	BRCT&O
KRSU	NCMCH	RCHS&OT
OshSU	NCS	SRCVSC
AsMI	NCO&H	KRCB&RT
IHMS		
KSMIRCME		
SB of the KSMIRCME		

Annually, MoH approves a Plan of Admission to Clinical Residency by various specialties and also determines the number of contract and state-financed places.

According to the Plan KSMA, KSMIRCME, SB of the KSMIRCME, NCMCH and the KRCB&RT provide both state-financed postgraduate education and the contract-based postgraduate education. Other organizations deliver training mainly on a contract basis.

An amount for contractual training is set independently by each organization in accordance with the established state rules; and depending on a specialty it varies from 25,000 soms to 80,000 soms per one year of training.

AsMI and IHMS provide postgraduate training for international students only.

At present, 2,284 residents pass residency in medical and pediatric specialties in medical universities and health organizations that have the right to provide postgraduate training, of them 1,239 are the first year trainees and 1,045 are the second year trainees.

These residents are graduates from medical universities of 2016 and 2017 years. Their total number for two years was about 2,284 (data without taking into consideration AsMI and IHMS) (Table 4.1.2.).

Table 4.1.2. Number of graduates and trainees (residents)[1]

Medical University ( )	Graduates of 2016 (medical and pediatric deps)	Graduates of 2017 (medical and pediatric deps)	Organizations and universities (postgraduate)	Number of 1st Year residents	Number of 2nd Year residents
KSMA	522	565	KSMA	351	242
KRSU	206	294	KRSU	192	186
OshSU	304	320	OshSU	179	203[2]
JaSU	56	64	-	-	-
			KSMIRCME	125	113
			KSMIRCME (southern branch)	240	211
			NCS	21	17
			NCC&T	30	22
			NCMCH	60	16
			NCO&H	12	6
			BRCT&O	17	14

[1] Number of 2016 and 2017 graduates and 1st and 2nd Year residents in medical and pediatric specialties
[2] Of them two residents are 3rd Year residents in neurosurgery

			RCHS&OT	4	3
			SRCVSC	8	10[3]
			KRIB&RT	-	2
Sub-total	1088	1243	Sub-total	1239	1045
TOTAL	**2331**		**TOTAL**	**2284**	

In practice, enrollment of clinical residents in various specialties depends more on the number of those who wish and is not always consistent with the Distribution Plan approved by the MoH annually. Most often students choose such specialties as obstetrics-gynecology, surgery, cardiology, neurology, dentistry.

Provided state-financed places for some specialties may be redistributed to other specialties. For example, annually this happens to state-financed places provided for Family Medicine specialty. In 2016, over 200 places were provided for this specialty as well as 95 places in 2017. Vacant state-financed places provided for this specialty were redistributed to other specialties.

It should be mentioned that recent years the number of residents who choose Family Medicine specialty has started to increase.

Distribution of residents by all specialties by health organization is attached (Appendix 1).

Total number of residents (1st and 2nd Year trainees) by some specialties is shown in Table 4.1.3.

Table 4.1.3. Total number of residents (1st and 2nd Year trainees) by some specialties[4]

Specialty	Total number of residents	Specialty	Total number of residents
Obstetrics & Gynaecology	284	Pediatrics	111
Surgery	177	Neonatology	65
Anaesthesiology and resuscitation	110	Infectious diseases	28
Cardiology	165	Neurosurgery	21
Therapy	229	Endocrinology	55
Neurology	154	Childhood infectious diseases	9
Traumatology and orthopedics	89	Pediatric surgery	25
Oncology and radiation therapy	67	Pediatric cardiorheumatology	5
Dermatovenereology	67	Pediatric oncology	5
Otolaryngology	84	Pulmonology	10
Family Medicine	82	Nephrology	7
Ophthalmology	77	Functional diagnostics	2
Urology	72	Phthisiology	12
Gastroenterology	20	Psychiatry	11
Hematology	4	Clinical rehabilitology and physiotherapy	2

4.2. Health organizations which are clinical sites of medical universities in Bishkek and Osh

Clinical sites are clinical subdivisions of medical universities as well as health organizations which provide appropriate conditions for practical training at all levels of medical education: pregraduate, postgraduate and continuing.

[3] Of them one resident is a 3rd Year resident in Cardiosurgery

According to the Order of the MoH #54 as of 12.08.2008 the list of clinical sites for higher and secondary medical education institutions was approved as well as clinical sites for six medical universities: KSMA, KSMIRCME, KRSU, OshSU, IHMS and SB of the KSMIRCME.

This list of clinical sites for higher medical education includes all republican health organizations, national centers and research institutions, all oblast health organizations (oblast merged hospitals, oblast FMCs, oblast centers of state sanitary epidemiological service), dental clinics and health organizations of Bishkek and Osh cities.

Currently, residents receive training in 13 republican health organizations and 15 city health organizations in Bishkek.

In Bishkek, residents typically take postgraduate training in the organizations where clinical chairs of medical universities are located. These health organizations simultaneously accept residents from almost all medical universities available in Bishkek. (Tables 4.2.1 and 4.2.2.).

In Osh residents take training in 11 HOs, of them 6 oblast organizations have also the status of interregional organizations for three southern regions, 3 urban health organizations and 2 private cardiology clinics (Table 4.2.3.).

Two medical universities, OshSU and SB of the KSMIRCME, send residents predominantly to these HOs.

Table 4.2.1. List of clinical sites where residents take training, republican HOs, Bishkek

#	Clinical Site	Medical universities that sent residents
1.	National Center of Mother&Child Health	KSMA, NCMCH, KSMIRCME
2.	The Kyrgyz Research Institute of Balneology and Rehabilitation Treatment	KSMA, KRIBRT
3.	National Center of Phthisiology	KSMA, KRSU, KSMIRCME
4.	National Center of Cardiology and Therapy	KSMA, KRSU, NCC&T, KSMIRCME
5.	National Center of Oncology and Hematology	KSMA, KRSU, NCO&H, KSMIRCME
6.	Republican Center of Dermatovenereology	KSMA, KRSU, KSMIRCME
7.	Republican Center of Mental Health	KSMA, KSMIRCME
8.	Republican Center of Narcology	KSMA
9.	Kyrgyz National Center of Human Reproduction	KRSU
10.	National Hospital	KSMA, KRSU, KSMIRCME
11.	National Center of Surgery	KSMA, NCS, KSMIRCME, AsMI
12.	Republican Infectious Diseases Hospital	KSMA, KRSU, KSMIRCME
13.	Research Center of Heart Surgery and Organ Transplantation	RCHS&OT

Table 4.2.2. List of clinical sites where residents take training, Bishkek city HOs

#	Clinical Site	Medical universities which sent residents
1.	City Clinical Hospital # 1	KSMA, KRSU, KSMIRCME
2.	City Clinical Hospital # 6	KSMA, KSMIRCME
3.	Bishkek Research Center of Traumatology and Orthopedics	KSMA, KRSU, BRCT&O, KSMIRCME
4.	City Children's Clinical Hospital of Emergency Care	KSMA, KRSU
5.	Clinical Maternity Home #2	KSMA, KRSU, KSMIRCME
6.	City Gynecological Hospital #3	KSMIRCME
7.	City Perinatal Center	KSMA, KRSU
8.	City TB Hospital	KSMA
9.	City TB Center	KSMA
10.	Clinical Hospital of the Department of Presidential Affairs and the KR Government	KSMA
11.	FMC #8	KSMA
12.	FMC #7	KSMA
13.	FMC #6	KSMA
14.	FMC #5	KSMA
15.	FMC #18	KSMA
16.	FMC #19	KSMIRCME

Table 4.2.3. List of clinical sites where residents take training, oblast and city HOs located in Osh

#	Clinical Site	Medical universities which sent residents
1.	Osh Interregional Clinical Hospital	KSMA, OshSU, SB KSMIRCME
2.	Osh Interregional Children's Clinical Hospital	OshSU, SB KSMIRCME
3.	Osh Interregional Center of Oncology	OshSU
4.	Osh Oblast Center of Mental Health	OshSU, SB KSMIRCME
5.	Osh Interregional Center of Dermatovenerology	OshSU, SB KSMIRCME
6.	Osh Oblast TB Center	OshSU, SB KSMIRCME
7.	City Perinatal Center	OshSU, SB KSMIRCME
8.	City Clinical Hospital	OshSU, SB KSMIRCME
9.	FMC#1	OshSU, SB KSMIRCME
10.	Cardio Asia + Clinic	OshSU, SB KSMIRCME
11.	Osh Cardio Medical Center	OshSU, SB KSMIRCME

4.3. Cooperation of health organizations being clinical sites with medical universities

Allotting clinical sites to medical universities is regulated by Regulation "On the procedure of interaction between health organizations and higher and secondary professional educational institutions in terms of practical training of students" approved by the KR Government (the KR GR#425 as of 05.08.08).

The relationship between medical universities and health organizations being clinical sites in terms of practical training of students is ensured based on the Standard Agreement on Cooperation between Health Organizations and Educational Organizations approved by the Ministry of Health of the KR with the agreement of the Ministry of Education and Science of the KR (Order of the KR MoH #10 as of January 19, 2009).

It should be mentioned that despite the available approved Standard Agreement, each medical university developed these agreements on their own. During interviews most managers mentioned that they didn't know about availability of the approved Standard Agreement.

According to the Regulation approved by the KR Government, managers of clinical sites should ensure needed conditions for practical training including the required number of classrooms and opportunities to use equipment and facilities of HOs in the training process

Educational institutions are responsible for renovating classrooms in a clinical site allocated for educational organizations, paying utilities of allocated premises for educational purposes, according to the agreement between an educational organization and a health organization. Also, according to the Regulation a clinical site doctors with academic degree, 1st/highest qualification category have the right to be engaged in teaching activities and work as part-timers in educational organizations.

The agreement concluded between a university and a health organization basically specifies the following major provisions:

- obligations of the parties concerned;

- allotment of classrooms to a chair and creation of conditions for the educational process, use of medical equipment in the training process;

- renovation of classrooms in a clinical site;

- payment for utility costs;

- payment to HO specialists who are part-timers.

In practice, conditions for the use of clinical sites by various universities differ and depend on the capacity of universities and the agreed conditions in contracts (payment for utilities, amount of rent etc.)

The KSMA and the KSMIRCME have classrooms in health organizations owing to a historically established practice of training. Typically, they do not pay rent and utilities.Basically, they only renovate and maintain classrooms. However, under the agreement staff members of the medical university chairs (professors, associate professors, and assistants) have to provide consultations for patients, participate in consultations during the discussion of severe cases, perform surgeries or participate in operations, hold 2-3 night shifts per month in a department without any compensation.

Additionally, staff members of HOs, most typically heads of this or that department (unit) are part-timers of these universities' chairs and receive payment as part-time employees.

Other medical universities such as KRSU, AsMI, IHMS, OshSu pay a rent for premises, pay utility costs and renovate premises including those that are used by HOs. Staff members of HOs are also part-timers of these universities' chairs and receive payment as part-time employees.

Number of residents who do training at clinical sites is determined by the residency unit and chairs of medical universities. Clinical sites cannot regulate and limit the number of residents.

During interviews the majority of managers of HOs with available chairs of universities stated that it is necessary to revise the terms of agreements with medical universities. It is required to introduce

a compulsory payment for the use of clinical sites and premises as well as clinical supervision by doctors using funds received by medical universities for contract training of residents. Clinical sites might use these funds to develop organizations in terms of equipment procurement, better learning environment etc. In addition, payment for the use of clinical sites would increase the responsibility of HOs for postgraduate training of residents.

According to the abovementioned regulatory documents medical universities have contracts with a number of health organizations located both in regions and Bishkek. As the assessment is aimed at exploring the clinical sites of medical universities located in Bishkek and Osh where the most number of residents is observed the report gives data of these health organizations only.

Currently, the KSMA has contracts with 34 health organizations located in Bishkek, the KRSU – with 31 health organizations; the KSMIRCME has 7 operating contracts with HOs and 11 contracts under renewal due to expiry of contracts.

IHMS concluded 2 perpetual contracts with HOs, AsMI signed 5 contracts with HOs.

OshSU has contracts with 13 organizations located in Osh.

The list of health organizations which signed contracts with medical universities includes also private health organizations having medical practice license. The List of health organizations which signed contracts with medical universities is attached (Annex 2).

Postgraduate training of residents in all specialties is not provided by all HOs which signed contracts with medical universities. Some health organizations are used only for pregraduate practical training for students of all Years.

4.4. Clinical chairs of medical universities located in health organizations

Clinical chairs belong to specialized departments and are structural subdivisions of medical universities which carry out educational and practical process at clinical sites.

The majority of clinical chairs of medical universities are established in health organizations both at the republican level and at the level of Bishkek city health organizations for the purpose of practical training of students and residents.

Currently, clinical chairs of medical universities are available in 23 health organizations of Bishkek. The majority of chairs are located in republican HOs. Most of the chairs are established in the National Hospital – 23 chairs of four universities (KSMA, KRSU, KSMIRCME, IHMS). National Center of Mother&Child Health, City Perinatal Center and City Clinical Hospital #6 have 5 chairs each. National Center of Oncology has 6 chairs.

In Osh, clinical chairs of OshSU are housed both in oblast and city HOs. Most of the chairs of OshSU and Southern Branch of the KSMIRCME are located in Osh Interregional Clinical Hospital – 10 chairs. The list of chairs located in clinical sites is attached (Annex 3).

To implement educational and practical activities adequate spaces have been allocated for these chairs by health organizations where classrooms and lecture halls are located. For example, only the KSMA chairs occupy an area of more than 850 sq.m. in the National Hospital. In other health organizations, where there are the KSMA chairs the area of occupied territories ranges from 50 to 400 square meters.

4.5. Distribution of clinical residents by clinical sites in Bishkek

Currently, 1,235 residents of the 1st and 2nd Year received postgraduate training in different specialties at clinical sites of Bishkek, of them 914 residents – in republican HOs and 321 residents – in city hospitals and FMCs of Bishkek city.

The largest number of residents is trained at the National Hospital - 354 residents, National Center of Mother&Child Health - 163 residents and National Center of Cardiology and Therapy - 127 residents.

According to the curriculum, in order to pass small cycles residents are sent to other Bishkek HOs or to regional HOs and spent there from 2 weeks to 2 months (Table 4.5.1.).

Table 4.5.1. Number of residents at clinical sites, republican HOs, Bishkek

#	Clinical site	Number of residents by all specialties					
		KSMA	KRSU	NC	KSMIRCME	AsMI	Total
	1	2	3	4	5	6	7
1	National Hospital	206 (52)*	92		56	-	354
2	National Center of Mother&Child Health	57 (24)*	-	76	30 (10)*	-	163
3	National Center of Cardiology and Therapy	48 (20)*	24	52	3	-	127
4	National Center of Oncology and Hematology	28	20	18	12	-	78
5	National Center of Surgery	9	-	38	21	3[5]	71
6	Republican Center of Dermatovenereology	21	21	-	17	-	59
7	Republican Infectious Diseases Hospital	19 (5)*	6	-	3(2)	-	28
8	Republican Center of Mental Health	6	-	-	2	-	8
9	National Center of Phthisiology	3	2	-	2	-	7
10	Republican Center of Human Reproduction	-	-	-	7	-	7
11	The Kyrgyz Research Center of Balneology and Rehabilitation Therapy	2	-	2	-	-	4
12	Republican Center of Narcology	1	-	-	-	-	1
13	Research Center of Heart Surgery and Organ Transplantation	-	-	7	-	-	7
	Total						**914**

*Note. Figure in brackets shows the number of residents of total number of those who are currently in regional HOs or Bishkek HOs passing small cycles from 2 weeks to 2 months.

[5] Residents - foreigners

In Bishkek city health organizations 320 residents of the 1st and 2nd Year take postgraduate training. Most of the residents are in Bishkek Research Center of Traumatology and Orthopedics - 67 residents, City Children's Clinical Hospital – 65 residents and City Perinatal Center – 41 residents.

Bishkek Research Center of Traumatology and Orthopedics has a license for postgraduate training in the residency unit according to which currently it has 31 residents.

In Bishkek, FMC#6 and FMC#18 have 1 resident each in family medicine specialty. 10 1st Year residents in this specialty have been sent to the Clinical Hospital of the Department of Presidential Affairs and the KR Government.

Table 4.5.2. Number of residents at clinical sites, Bishkek city HOs

#	Clinical Site	Number of residents by all specialties				
		KSMA	KRSU	NCMCH	KSMIRCME	Total
		3	4		5	8
1	City Clinical Hospital #1	28 (4)*	28		4	60
2	City Clinical Hospital # 6	-			20	20
3	Bishkek Research Center of Traumatology and Orthopedics	9	16	31	11	67
4	City Children's Clinical Hospital of Emergency Care	39 (6)*	26			65
5	Clinical Maternity Home #2	28 (10)*	6		3	37
6	City Gynecological Hospital #3	-			2	2
7	City Perinatal Center	35 (10)*	6			41
8	City TB Hospital	2				2
9	City TB Center	3				3
10	Clinical Hospital of the Department of Presidential Affairs and the KR Government	10[6]				10
11	FMC#8	3				3
12	FMC#7	6				6
13	FMC#6	1				1
14	FMC#5	1				1
15	FMC#18	1		1		2
16	FMC#19	1			1	1
	Total:					**321**

* Note. Figure in brackets shows the number of residents of total number of those who are currently in regional HOs or Bishkek HOs passing small cycles from 2 weeks to 2 months.

[6] Number of the 1st Year residents in Family Medicine specialty

In Osh, 423 residents of the 1st and 2nd Year take postgraduate training in oblast and city health organizations. Most of the residents take training in Osh Interregional Clinical Hospital – 269 residents and City Clinical Hospital – 78 residents.

In Osh, residents take family medicine residency training in FMC#1 which has 20 branches and 6 residents of the 1st Year.

20 residents take postgraduate training in cardiology in two private medical centers for cardiology.

Table 4.5.3. Number of residents at clinical sites, oblast and city HOs, Osh

#	Clinical Site	Number of residents by all specialties			
		KSMA	OshSU	SB KSMIRCME	Total
1.	Osh Interregional Clinical Hospital	4	137	128	269
2.	Oblast Children's Clinical Hospital	-	9	20	29
3.	Oblast Center of Mental Health		1	1	2
4.	Oblast Dermatovenerologic Dispensary		4	1	5
5.	Oblast Center of Oncology		4		4
6.	Oblast TB Center		1		1
7.	City Clinical Hospital	-	48	30	78
8.	City Perinatal Center	-	2	7	9
9.	FMC#1	-	-	6	6
10.	Cardio Asia+ Medical Center	-	8	4	12
11.	Osh Cardio Medical Center	-	5	3	8
	Total:	**4**	**219**	**200**	**423**

4.6. Distribution of clinical residents by specialty at clinical sites

According to medical universities and health organizations 354 residents from three universities (KSMA, KRSU and KSMIRCME) take postgraduate training in 12 specialties in the National Hospital: the largest number of residents in the following specialties: Neurology - 71, Anesthesiology and Resuscitation - 68, Otolaryngology – 51, Ophthalmology - 49, Urology – 47 and Surgery – 27.

The estimated number of residents in these specialties is 97 residents.

75 residents from three medical universities (KSMA, KRSU and KSMIRCME) take training in 5 specialties in the NCC&T. In addition, the NCC&T has own Research and Educational Center where 52 residents also take training. The Research and Educational Center of the NCC&T provides training in three specialties: Cardiology, Therapy (internal diseases) and Functional Diagnostics. As for Functional Diagnostics residents are trained in the 3rd Year after two-year residency in "Cardiology". As a Head of the NCC&T Residency Unit noted, most typically these residents go to foreign clinics as the capacity of the NCC&T to provide skills in invasive endovascular cardiology is limited due to lacking equipment.

Totally, 71 residents take postgraduate training in General Surgery in the National Center of Surgery. The NCS has also its own residency unit with 38 residents, the rest are residents from the KSMA, KSMIRCME and AsMI.

163 residents take postgraduate training in 6 specialties in the NCMCH. Of them, 60 residents receive training in Obstetrics and Gynecology, the others – in pediatric specialties. As for Obstetrics and Gynecology and Neonatology residents receive training in the Clinical Maternity Home of the NCMCH, the other pediatric specialties are studied by residents in relevant units of the NCMCH.

78 residents from 3 medical universities (KSMA, KRSU, KSMIRCME) and the NCO&H residency unit take postgraduate training in 4 specialties in the NCO&H. (Table 4.6.1.).

Table 4.6.1. Characteristics of HOs and number of residents by specialty, republican HOs, Bishkek

Units by Specialty	By specialty					
	Number of beds	Number of hospitalizations	Number of outpatient visits	Number of doctors	Total number of residents	Estimated number of residents
1	2	3	4	5	6	7
National Hospital						
Anesthesiology and resuscitation	32	1744	-	36	68	5
Urology	120	5767	8892	35	47	18
Neurology	172	5216	13866	36	71	18
Gastroenterology	40	511	8979	6	8	4
Neurosurgery	70	1085	-		14	3
Otolaryngology	57	2030	10165	17	51	9
Ophthalmology	107	4886	12215	31	49	16
Therapy	30	954	6563	8	3	5
Surgery	90	2169	4219	8	27	7
Endocrinology	40	939	7588	5	14	5
Pulmonology	25	945	4072	4	1	4
Nephrology	23	522	3142	10	1	3
Total, residents					**354**	**97**
National Center of Cardiology and Therapy						
Cardiology	204	4539	34914	31	75	13
Therapy (internal diseases)	30[7]	1508	19432	6	36	9
Functional diagnostics	-	-	-	6	2	2
Pulmonology	20	631	5524	4	10	3
Nephrology	35	989	4545	7	4	4
Total, residents					**127**	**31**
National Center of Surgery						
General Surgery	262	7979	-	35	71	22
Total, residents					**71**	**22**
National Center of Mother&Child Health						
Obstetrics and gynecology	80	5837	17411	29	60	21
Pediatrics	306[8]	12716	36528	24	69	45
Pediatric anesthesiology and	28	535	-	26	6	2

[7] Rheumatological beds

[8] Beds by pediatric profiles (pediatric, ENT, endocrinological, nephrological, pulmonological, hematological, etc.)

resuscitation						
Pediatric surgery	80	2176	2887	9	9	7
Neonatalogy	No data	2901[9]	No data	16	11	8
Pediatric neurology	35	1078	16695	12	8	7
Total, residents					**163**	**90**
National Center of Oncology and Hematology						
Oncology	290	5281	8909	24	58	17
Radiation therapy	75	495	-		11	2
Pediatric oncology	35	429	-		5	2
Hematology	62	1494	13524	22	4	8
Total, residents					**78**	**29**
Republican Center of Dermatovenereology						
Dermatovenereology	70	956	85974	19	59	25
Total					**59**	**25**
Republican Infectious Diseases Hospital						
Infections diseases	150	3935	9078	8	19	12
Children's infectious diseases	250	24666	-	12	9	48
Total, residents					**28**	**60**
Republican Center of Mental Health						
Psychiatry	460	4132	83780	47	6	32
Total, residents					**6**	**32**
National Center of Phthisiology						
Phthisiology	390	2154	4716	16	7	39
Total, residents					**7**	**39**[10]
Republican Center of Human Reproduction						
Obstetrics and Gynecology	70	2882	No data	26	7	**8**
Total, residents					**7**	**8**

Predominately, residents from three medical universities (KSMA, KRSU and KSMIRCME) receive training in Bishkek city inpatient health organizations.

In CCH#1 and CCH#6, residents receive training in 7 specialties. In BRCT&O there are 67 residents including 31 residents of the BRCT&O residency unit in Traumatology and Orthopedics specialty.

In City Clinical Maternity Home#2 and City Perinatal Center residents take training in Obstetrics and Gynecology specialty.

52 residents in 3 specialties receive training in the City Children's Clinical Hospital of Emergency Care. Based on the number of hospitalizations and outpatient visits and according to the criteria chosen for standard workload per one resident this facility may accept a greater number of residents – up to 89.

[9] Number of deliveries per year

[10] Estimated number is calculated based on number of beds

Table 4.6.2. Characteristics of HO and number of residents by specialty, Bishkek city HOs

Specialty	By specialty					
	Number of beds	Number of hospitalizations	Number of outpatient visits	Number of doctors	Number of residents	Estimated number of residents
1	2	3	4	5	6	7
City Clinical Hospital #1						
Cardiology	80	3046	-	10	4	8
Neurology	65	1392	55	8	4	4
Surgery	120	5247	-	31	20	15
Therapy	30	2811	-	4	1	8
Endocrinology	40	1277	-	2	15	4
Anesthesiology and Resuscitation	36	-	-	14	3	3
Total, residents					**47**	**42**
City Clinical Hospital # 6						
Cardiology	50	637	-	5	2	2
Therapy	40	4126	-	4	15	11
Gastroenterology	н/д	н\д	-	н\д	3	3
Total, residents					**20**	**16**
Bishkek Research Center of Traumatology and Orthopedics						
Traumatology and Orthopedics	445	7006	4423	45	67	21
Total, residents					**67**	**21**
City Children's Clinical Hospital of Emergency Care						
Pediatric surgery and traumatology	186	6647	101363	28	24	44
Pediatrics	185	14143	23346	26	9	43
Neonatology	-	478	-	5	19	2
Total, residents					**52**	**89**
Clinical Maternity Home # 2						
Obstetrics and gynecology	150	8382	-	29	37	23
Total, residents					**37**	**23**
City Perinatal Center						
Obstetrics and gynecology	230	11267	4458	44	41	31
Total, residents					**41**	**31**

In Osh, 269 residents from OshSU and SB of the KSMIRCME receive training in 15 specialties in Osh Interregional Clinical Hospital. The majority of residents take training in Therapy – 78, Neurology - 37, Obstetrics and Gynecology – 29 and Surgery – 24.

The estimated number of residents in these specialties totals 110 residents.

78 residents receive postgraduate training in 9 specialties in the City Clinical Hospital. The largest numbers of residents take training in Urology and Surgery – 14 residents as well as Cardiology - 13.

Table 4.6.3. Characteristics of HOs and number of residents by specialty, oblast and city HOs, Osh *city*

Specialty	By specialty					
	Number of beds	Number of hospitalizations	Number of outpatient visits	Number of doctors	Number of residents	Estimated # of residents
1	2	3	4	5	6	7
Osh Interregional Clinical Hospital						
Cardiology	80	1825	7640	13	23	7
Neurology	55	1085	9222	10	37	5
Surgery	61	2525	2976	13	24	8
Therapy	20	1986	21089	12	78	11
Endocrinology	40	1385	7320	6	15	6
Anesthesiology and resuscitation	15	1760	0	27	5	5
Gastroenterology	40	1178	7525	6	6	5
Infectious Diseases	90	2544	0	11	3	7
Traumatology	46	912	2894	15	9	3
Neurosurgery	45	1278	No data	5	4	3
Urology	50	1303	3643	7	16	5
Otolaryngology	35	1152	10151	7	10	6
Ophthalmology	40	1363	17269	8	8	8
Obstetrics and gynecology	145	9493	5220	30	29	27
Nephrology	35	1053	5686	6	2	4
Total, residents					**269**	**110**
Osh Interregional Children's Clinical Hospital						
Pediatric Cardiology	30	654	No data	No data	2	2
Pediatric Neurology	55	1607	No data	No data	2	4
Pediatric Surgery	80	2972	2719	8	5	9
Pediatric Traumatology	50	1648	3758	8	2	6
Pediatric Anesthesiology and Resuscitation	12	578	0	13	2	2
Pediatric Otolaryngology	55	2707	6176	5	1	10
Pediatrics	190	8840	22432	29	14	28
Childhood Infectious Diseases	No data	No data	No data	No data	1	-
Total, residents					**29**	**61**
Oblast Dermatovenerologic Dispensary						
Dermatovenereology	110	1879	53764	18	5	19
Total, residents						**19**
Oblast Center of Mental Health						
Psychiatry	170	2002	8885	19	2	17[11]
Total, residents						**17**
Oblast Center of Oncology						
Oncology and Radiology	100	3484	2884	12	4	
Итого ординаторов						
Oblast TB Center						
Phthisiology	200	1122	10174	11	1	20[12]
Total, residents						**20**

[11] Estimated number is calculated based on number of beds

[12] Estimated number is calculated based on number of beds

City Clinical Hospital #1						
Cardiology	40	1449	-	12	13	4
Therapy	95	3468	-	13	9	10
Neurology	40	1543	-	11	14	4
Surgery	50	2444	-	6	14	7
Traumatology	70	1819	-	15	8	5
Neurosurgery	45	1653	-	2	3	5
Urology			-	2	4	-
Otolaryngology	35	1224	-	6	6	3
Ophthalmology	35	1251	-	4	7	3
Total, residents					**78**	**41**
City Perinatal Center						
Obstetrics and gynecology	150	12480		26	8	34
Neonatalogy				12	1	-
Total, residents					**9**	**34**
Cardio Asia + Medical Center						
Cardiology	50	655	No data	10	12	2
Total, residents					**12**	**2**
Osh Cardio Medical Center						
Cardiology	60	1715	No data	8	8	5
Total, residents					**8**	**5**

4.7. Organization of residents training at clinical sites

Training of residents at clinical sites is carried out in accordance with the curriculum and educational and professional training program in different specialties of clinical residency.

The maximum academic workload under the training program is 54 hours per week. Residents also need to have 2-3 night shifts a month. The program involves regular lectures in classrooms and lecture theatres, seminars, practical sessions and self-tuition. Residents also participate in clinical, diagnostic and educational work of the chair and healthcare facility.

Medical university residency unit and a head of chair or a chief of the healthcare facility department that works part-time in medical university chair manage and oversee training of their clinical residents.

For personal supervision of clinical residents' day-to-day work, the main department of the clinical site, where the residency takes place, has a dedicated physician with required clinical practice experience.

An individual training plan for residents is developed and approved by a chief of the department - resident's supervisor, based on the curriculum and their training program.

In accordance with the training programs, the residents are rotated in all clinical departments of health organizations or other facilities to have small training cycles in different specialties. Duration of small cycles ranges from 2 to 8 weeks depending on specialty and curriculum. During rotation on small cycles the resident is referred to a certain department or facility, where the resident will have an assigned supervising physician.

Those residents that have training cycle in hospitals with outpatient and diagnostic departments see patients jointly with a doctor during their outpatient visits and follow-up with a patient.

The number of patients that can be managed by residents depends on the number of patients served by a physician/immediate supervisor of the resident. Residents can only manage those patients who are assigned to their attending physician/immediate supervisor.

Assignment of patients to attending physicians is done based on hospital wards. Each attending physician in a hospital department is in charge of 2 wards with 4-to 8 patients on average, depending on doctor's caseload. Depending on the number of beds and patients in the department, the number of doctors and residents, residents in some departments manage no more than 2-3 patients (in urology, and surgery departments of the National Hospital, in different department of the National Surgery Center, gynecology department of the National Mother & Child Health Center). Residents working in the National Center of Cardiology and Therapy cited that they manage maximum 4 patients. In city hospital residents can manage up to 7-8 patients.

Situation in Osh city healthcare organizations also depends on organization and department, where the resident works. Surgical and obstetric-gynecological departments in Osh Interregional Clinical Hospital have the highest caseload, therefore residents can manage no more than 2-3 patients. Residents' caseload in some departments of therapeutic profile, such as cardiology, therapy, endocrinology with a lot of residents is 4-5 patients.

Caseload of residents in some departments of Osh city hospital does not exceed 4-5 patients (department of neurology, surgery and cardiology).

Residents' working day in a hospital department is from 8 am to 4 pm. The working day of all residents starts from compulsory participation at daily staff-meeting of the hospital department.

Residents follow up with patients treated by their supervisor on a daily basis in every department, regardless of their specialty. They do rounds together with attending doctor to see patients assigned to them. Residents accompany patients when they need to have necessary instrumental and laboratory tests done.

Residents independently write and keep medical records, develop interim history and hospital discharge summary, have two or three night shifts a month in the hospital.

Residents constantly monitor prescriptions of the doctor, interpret results of laboratory and diagnostic tests and report them to the doctor. In some cases, they can independently refer a patient to laboratory tests (blood test, urine test).

4.8. Main practical skills and manipulations performed by residents in some specialties at clinical sites

Assessment of practical skills and manipulations to be done by residents at their first and second year of residency education program was carried out as part of this study based on interviews with heads of facility departments, heads of university chairs and residents.

A list of manipulations presented below for some specialties was determined only based on interviews with physicians, heads of departments and residents, and may differ from the list of manipulations and skills that residents should have in accordance with approved training programs.

Depending on the specialty, residents have to develop different practical skills and perform certain manipulations. Almost all supervisors of residents reported that the level of skills and ability to perform certain manipulations depends on the residents' performance. Only a certain part of residents who are very active is able to develop good skills. These residents can work overtime, stay on night shifts, etc.

The main practical skills and manipulations that residents can do independently under the ***specialty "Therapy"*** include:

- examination of patients, collection of complaints and anamnesis;

- general patient examination (palpation, percussion, auscultation of lungs, heart);

- blood pressure measurement;

- reading and interpreting of ECG results;

- measuring peak expiratory flow rate (PEFR);

- interpretation of laboratory, biochemical test results, results of ultrasound examination and other instrumental methods of patient examination;

- artificial respiration, closed-chest massage, electrical heart defibrillation.

The main practical skills and manipulations that residents can do independently under the ***specialty "Surgery"*** include:

Residents of the 1-st year of the training program:

- examination of surgical patients: taking medical history, physical examination, palpation, percussion, auscultation;

- application of dressing to well-conditioned and purulent wounds and immobilization dressings;

- stopping external bleeding;

- wound care;

- incision of skin, tying of different surgeon’s knots, making main types of suturing

- suturing a wound;

- removal of skin sutures;

- tracheotomy;

- participate in surgeries as second assistant;

Second year residents:

– During a surgery to do incision, drainage, suturing without external support;

- Involvement as first and second assistant in surgery (appendectomy, lavage of the abdominal cavity, abdominal herniotomy, cholecystectomy, operations to eliminate intestinal obstruction, surgeries for perforating gastric ulcers, duodenal ulcer, intestine, urgent surgical operations, injuries, injuries, surgery for purulent diseases of soft tissue).

Residents are not trained and are not involved in assisting in surgeries with endoscopic devices and operating techniques. National Surgery Center has 3 laparoscopic operating tables, 3 gastroscopes, a bronchoscope and a colonoscope. Osh Interregional Clinical Hostpial also has a number of diagnostic and endoscopic equipment (gastroscopy, bronchoscope, colonoscope, etc.)

The main practical skills and manipulations that residents can do independently under the ***specialty "Paediatrics"*** include:

- physical examination of patients: check-up, collection of complaints and history taking, palpation, percussion, auscultation;

- calculation of children's doses of medicines;

- feeding a child through enteral feeding tube;

- interpretation of biochemical blood tests, X-ray images, ultrasound data;

- rapid relief of seizures;

- artificial respiration, closed-chest massage;

The main practical skills and manipulations that residents can do independently under the ***specialty "Obstetrics & Gynecology"*** include:

First year residents (Obstetrics):

- taking a history of childbirth, keeping gravidograms and partographs;

- management of pregnant women in the third period of pregnancy;

- fetal heart rate auscultation and assessment;

- make and interpret fetal cardiotahography (CTG);

- rupture of amniotic fluid sac;

- attending delivery under the supervision of a doctor and a midwife;

- involvement as 1-st and 2nd assistant in a caesarean section surgery;

- suturing perineal rupture;

- manual removal of placenta and examination of postpartum uterus.

Second year residents (Gynecology):

- taking vaginal and urethral smears;

- examination using vaginal mirrors;

- insertion and removal of the intrauterine device

- artificial abortion under the supervision of an attending doctor;

- management of gynecological patients, examination, preliminary diagnosis, adjustment of treatment under supervision of the doctor.

National Center for Mother and Child Health has different equipment available for diagnostic and endoscopic examinations, including: machine for ultrasound examination, hysteroscope, laparoscope, colposcope. Residents do not assist and do not participate in performing these examinations and tests; they only can observe physicians performing these examination methods.

The main practical skills and manipulations that residents can do independently under the ***specialty "Cardiology"*** include:

- clinical examination of a patient, collection of complaints, taking history, interpretation of laboratory tests, preliminary diagnosis;

- measurement of blood pressure, pulse;

- palpation, percussion, auscultation of the lungs, heart;

- ECG reading and interpreting;

- exercising stress tests;

- measuring peak expiratory flow rate (PEFR);

- interpretation of laboratory data, radiography of the lungs, heart.

National Center of Cardiology and Therapy, Osh Interregional Clinical Hospital have devices for angiography, electrophysiological heart test, several devices for EchoCG (echocardiogram), and

private cardiological clinics like Osh Cardio, Cardio Asia also have angiographs and several devices for echocardiography. However, the residents are not trained anywhere and do not get involved in invasive endovascular manipulations, nor are they trained in diagnosis of echocardiography. The management of organizations explains this by a lack of available equipment.

The main practical skills and manipulations that residents can do independently under the ***specialty "Urology"*** include***:***

- clinical examination of the patient, collection of complaints, history-taking, interpretation of laboratory tests;

- non-invasive examination in patients with urinary disorders;

- taking urethral smear;

- rectal examination of the prostate;

- catheterization of the bladder with a soft and metallic catheter;

- interpretation of results of urography, ultrasound examination of kidneys, bladder, prostate, etc.;

- postoperative treatment, prevention of complications;

- dressings of postoperative wounds and wound care;

- suturing and removal of surgical sutures

- involvement in small surgical interventions as a first assistant (first year of training) and in surgeries on urogenital system (first year of training).

The main practical skills and manipulations that residents can do independently under the ***specialty "Pulmonology"*** include***:***

- physical examination, collection of complaints, history-taking, interpretation of laboratory tests;

- measuring PEFR, making spirometry with evaluation of its monitoring results;

- pulse oximetry;

- collection of materials for cytological bacteriological examination (sputum, blood);

- anapnotherapy with a nebulizer;

- oxygen therapy;

- interpretation of chest X-ray and CT;

- making and interpreting ECG

The main practical skills and manipulations that residents can do independently under the ***specialty "Endocrinology"*** include***:***

- physical examination of endocrine patients, collection of complaints, history-taking, interpretation of laboratory tests, preliminary diagnosis, drug therapy;

- resuscitation in hyperglycemic, hypoglycemic coma, thyrotoxic coma, addisonian crisis;

- palpation of the thyroid gland;

- rapid testing of blood sugar;

- interpretation of thyroid ultrasound;

- prevention of diabetic foot;

- reading and interpretation of ECG

4.9. Organization of postgraduate education on the specialty «General Practitioner»

KSMA has established Family Medicine Chair in 2017, which is physically based at FMC # 18 in Bishkek. The staff of this Chair coordinate and manage postgraduate education of residents in this specialty.

Two-year residency program on "General Practitioner" specialty was piloted in 2016, on the basis of KSMIRCME, in 2017 this program enrolled also residents from KSMA. In 2017 - 47 people were enrolled to the residency training program on the "General Practitioner" specialty.

According to the curriculum of the 'General Practitioner' specialty, duration of the education program is 2 years (96 weeks), including under 10% of theoretical training, and at least 90% of practical training.

Seminars and practical classes of the first-year residency program are carried out in a form of intramural modules lasting for 2 months.

In the rest of the time, lectures on the most important topics of the discipline are delivered in webinar form for 2 academic hours once a week. Then, this video lecture becomes freely accessible on the website in an electronic library.

During a first year of training program a resident has practical training in appropriate hospital department in the framework of studying general clinical disciplines, according to an individual plan and schedule of rotations.

During the second year of the program a resident works at the primary care level in FMC. The second-year residents can also have training in hospital out-patient departments.

During the assessment in Bishkek, a residency in the specialty "General Practitioner" was taken by 10 residents of 1st year of education on the basis of a hospital and 3 residents of the second year of training on the basis of three FMC in Bishkek.

In Osh, the training of residents in this specialty is carried out only by the southern KSMIRCME branch. These residents spend all two years of training in FMC. Most of the residents in this specialty are referred to district FMCs. At the time of the assessment, there were six first-year residents in FMC #1 in Osh.

It should be noted that primary care facilities of Bishkek and Osh do not work based on family medicine principle, therefore the residents do not have the opportunity to develop skills of family practice. Most often, residents are assigned to a pediatrician and to a therapist and receive skills only in these specialties.

Residents see patients of other specialties (gynecological, endocrinological, surgical, etc.) during their rotations for 2 weeks. It was noted that residents assigned to specialty physicians do not fully involved into patient examinations, they rather observe how their physician is doing it.

Main practical skills and manipulations to be performed by residents in specialty «General Practitioner»

First year residents have training course on general clinical disciplines according to their individual plan and schedule of rotations in a hospital department:

- follow up with patients, do rounds together with a doctor;

- fill out medical records and hospital discharge summary;

- read and interpret ECG;

- accompany patients to diagnostic and laboratory tests;

- have two mandatory night shifts in their hospital department.

Second year residents have practical training in FMC (for 4 weeks rotation on different specialties):

- see patients together with a doctor (4-5 patients per day, mostly therapeutic patients or children);

- fill out outpatient medical records, make prescriptions for medicines, and referrals to diagnostic tests;

- do home visits to patients in their catchment area;

- during the rotation between narrow specialists, the residents see patients with diseases of different profiles;

- ECG reading and interpretation;

- measuring peak expiratory flow rate, do spirometry;

- carry out external examination by otoscope and ophthalmoscope.

5. Key conclusions and recommendations

The aim of this assessment was to define a number of clinical residents in health organizations of Bishkek and Osh, which serve as clinical sites of medical universities and their access to relevant practical training and patients.

For this purpose, data of medical education organizations that carry out postgraduate education and data on infrastructure of health organizations that serve as clinical sites have been reviewed. Practical training of residents, a list of performed manipulations by residents were evaluated based on interviews with heads of health organizations, clinical supervisors and residents.

At present, 15 different organizations, including educational organizations and health care facilities provide postgraduate education in the Kyrgyz Republic on the basis of a license issued by the MoE&S. Each organization has its own educational programs for postgraduate training in various specialties, approved by the MoE&S. In addition, when issuing a license, MoE&S determines the maximum number of residents for different specialties for each organization.

At the same time, the Ministry of Health annually approves the Plan for Admission to the Residency and Internship Programs for different specialties and determines the number of positions by forms of training (contract-based or budget-funded). This distribution takes place mainly in specialties of the state-budget funded form of education. Number of contract-based residents' positions are determined on the basis of norms defined by MoE&S'. Despite the fact that for the last few years the plan of distribution of residents by state budget-funded specialties, approved by the MOH, is focused on the "General Practitioner" specialty, narrow specialties (obstetrics-gynecology, surgery, cardiology, neurology, etc.) continue to be preferable.

Procedure of health organizations interaction with medical universities in relation to practical training of residents and students is regulated by special Agreement. These relations are outlined

by regulatory documents, but health organizations receive limited financial support from educational organizations. Therefore, facilities that have a license for postgraduate training are more interested in training their own residents, since the tuition fees goes to the health organization's budget.

It was determined as part of this assessment that 13 republican and 15 city health organizations located in Bishkek provide postgraduate education. In Osh, 11 health organizations provide training of residents, including 3 oblast level facilities with a status of interregional organizations for three southern regions of the country, 3 city health organizations and 2 private cardiology clinics. These healthcare organizations admit residents of all medical universities in Bishkek and Osh.

Organization of postgraduate education at clinical sites in Bishkek and Osh has some differences. In Bishkek, residents usually have their postgraduate education in health organizations, which have university clinical chairs and the organization of their training is supervised by the chief of educational organization chairs and assistants.

The number of residents who have training at clinical sites is determined by a medical university postgraduate education department and a relevant chair. Health organizations that serve as clinical sites do not influence on the number of residents to be admitted. Most of Osh health organizations that provide postgraduate education for residents of Osh State University and the southern branch of KSMIRCME have clinical chairs at Osh State University, which provide undergraduate education. These chairs do not organize postgraduate education.

Staff of health organizations that work part time in educational organizations on different specialties regulate and oversee postgraduate training. For example, some specialty physician in health organization can act as coordinator of residents for surgical, therapeutic and other profiles in all health organizations, that have residents of the particular profile. This specialist coordinates the number of residents with a management of the health organization and regulates their number by rotating them to different departments or organizations. However, it should be noted, despite the fact that there are attempts to regulate the number of residents, this process is not formally described in any regulations.

According to the assessment, approximately 1228 residents of the first and second years of the residency program in various specialties receive postgraduate training at clinical sites in Bishkek and 423 residents in Osh. The number of residents in different educational organizations in Bishkek and Osh varies. About 95% of residents of KSMA and about 64% of KRSU of residents have their residency training program in Bishkek health organizations. - 57% of residents of Osh State University and 44% of residents of the southern KSMIRCME branch have their postgraduate training in Osh city.

Number of residents in Bishkek and Osh health organizations also varies, not all organizations have an excessive number of residents. Residents are mainly concentrated in several health organizations of the republican level, Osh interregional merged hospital and some city health organizations, where the number of residents is 3-4 times higher than the estimated number by the selected criteria. At the same time, some health organizations of republican, oblast, and city level could potentially admit more residents.

Training of residents at Bishkek and Osh clinical sites is carried out in accordance with the curriculum and an educational program for postgraduate training in different specialties. Every clinical resident has an individual training plan and a rotation schedule.

As far as access to patients is concerned, it depends on health organization and the profile of the department. It was noted that in all health organizations, the residents do not permanently manage 10 patients, on average up to 5 patients, depending on the specialty.

Practical skills development is focused on physical examination and management of patients in hospital department, keeping medical records and other documentation, prescription and adjustment of treatment, interpretation of laboratory and other test results. Residents develop good skills of physical examination - palpation, percussion, auscultation of organs. Residents of the surgical and obstetric-gynecological profile can be involved into surgeries as first or second assistants.

It should be mentioned that many republican health organizations provide services that are to be provided by hospitals of secondary level of health care. Residents can potentially develop these skills in these organizations with greater access to patients. Residents, especially in surgical and urological profiles reportedly have insufficient access to patients to develop their practical skills, since the hospital department has a lot of other residents and doctors. Even some working young doctors noted that they cannot be involved sufficiently in various surgical operations, since only department heads and very experienced doctors allowed to make surgeries. For example, during the assessment there were some residents enrolled to the National Hospital for their residency program, however in order to develop good skills they moved to urology department of Osh Interregional Merged Hospital.

The number of patients to be managed by a resident and development of practical skills depends on the clinical supervisor of the resident, since residents can only manage those patients and participate in various medical and diagnostic interventions that are carried out by his/her clinical supervisor among attending physicians of the health organization. Moreover, the attending physicians/clinical supervisors do not receive any bonuses for their clinical supervison. In addition, these physicians didn’t have any additional training in postgraduate training programs and in education science issues.

Almost all residents’ supervisors noted that development of skills and ability to perform certain manipulations depends on the residents’ performance. Only a part of the residents who are very active can develop good skills. These residents can work overtime, stay on night shifts, etc.

Most of the republican health organizations, the Osh Interregional Hospital, private cardiology clinics have a number of modern diagnostic equipment (equipment for loparoscopic surgery, gastroscopes, bronchoscopes, colonoscopes, equipment for ultrasound examination, echocardiography, endoscopic diagnostics, etc.). However, residents have very limited access to these types of equipment in all health organizations. Residents often are not involved in diagnostics and surgeries as assistants, more often can just observe other providers operating different equipment.

Residents of postgraduate training in the "General Practitioner" specialty do not develop skills of family medicine, since family doctors of primary care organizations in Bishkek and Osh do not work based on family medicine principles. Residents mainly manage therapeutic patients or children of their supervisor/family doctor. Opportunities for managing patients of other sub-specialties and development of skills in these fields are limited.

Inpatient facilities do not have any vacant positions; therefore, the residents do not receive any remuneration. Some residents get employed on their own initiative as paramedics (feldshers) in ambulance for night shifts. However, some FMC have their internal reserves and pay residents from wages for vacant positions.

Independent evaluation of residents' knowledge and practical skills based on results of the training at the clinical site is not carried out. Residents receive a document certifying that they had practical training in health organization, which educational organizations take into account in the process of final certification for postgraduate education.

It should be mentioned that some managers of health organizations in Bishkek and Osh lacks understanding forthcoming changes related to residency postgraduate education due to their low awareness. Some specialists from the health organizations and organizations of medical education believe that adequate postgraduate education and relevant skills can only be developed at healthcare facilities of the national level.

5.1. Recommendations

- To provide for active informing and involving of managers of health organizations, students and residents in the process of reforming postgraduate education and the benefits of decentralization of postgraduate education and clinical practice.

- To improve contractual relationships between health and educational organizations that will provide for responsibility of health organization for clinical training results and the commitment of educational institution to use health organization as a clinical site.

- Standardization of postgraduate education is required, which will limit the number of residents in each clinical site in accordance with the requirements for minimum caseload standards for one resident.

- In order to standardize postgraduate training and ensure quality of practical training it is required to accredit clinical sites by relevant authorities based on developed standards in different specialties in accordance with the programs for pre- and postgraduate training as well as retraining of health professionals.

- To consider the issue of organizing postgraduate education in tertiary level organizations (republican and province) only for highly specialized specialties, taking into account scope of services provided and standards requirements for clinical sites in accordance with the requirements of postgraduate training programs depending on the specialty.

- To provide for the organization of postgraduate training in the specialty "General Practitioner" only in primary care facilities focused at family medicine, or to provide for mandatory rotation of residents to organizations where family medicine principles work.

- Postgraduate training and teacher training of physicians/clinical supervisors should be provided for at all levels of the health sector.

- Detailed approach to solve the problem of remuneration for clinical supervisors and clinical residents is to be developed.

- To develop approaches to organization of continuous monitoring of the postgraduate education process, to make an independent evaluation of resident's knowledge and practical skills.

ANNEXES

Annex 1. Total number of distributed residents by specialties (2016-2017)

#	Specialties	Number of residents by specialty										
		KSMA	KSMIRCME	KRSU	NCMCH	NCC&T	NCS	BRCT&O	NCO	OshSU	SB KSMIRCME	Total
1	Obstetrics and gynecology	73	25	35	35					59	57	**284**
2	Anesthesiology and resuscitation	46	33	18						7	6	**110**
3	Gastroenterology	8	3							7	2	**20**
4	Hematology	4										**4**
5	Cardiology	31	4	24		28				48	30	**165**
6	Cardiosurgery										1	**1**
7	Therapy	16	16	14		24				82	77	**229**
8	Dermatovenereology	21	21	21						3	1	**67**
9	Infectious Diseases	10	5	6						2	5	**28**
10	Pulmonology	7	3									**10**
11	Nephrology	4	1								2	**7**
12	Functional Diagnostics	2										**2**
13	Clinical Pharmacology	1		2								**3**
14	Radiotherapy	6									1	**7**
15	Neurology	44	15	12						46	37	**154**
16	Neurosurgery	11	1	2						6	1	**21**
17	Oncology	18	12	12					16	4	5	**67**
18	Otolaryngology	30	12	11						13	18	**84**
19	Ophthalmology	22	12	15						11	17	**77**
20	Pathological Anatomy	4										**4**
21	Psychiatry	7	2								2	**11**
22	Family Medicine	33	20								29	**82**
23	Forensic Medicine	4	4									**8**
24	Sports Medicine	4										**4**
25	Physiotherapy	2		2								**4**

26	Traumatology and Orthopedics	9	10	16				31		11	12	**89**
27	Urology	24	7	16						9	16	**72**
28	Phthisiology	8	2	2								**12**
29	Clinical Rehabilitology and Physiotherapy	2										**2**
30	Surgery	42	21	20			38			34	22	**177**
31	Endocrinology	14	1	14						7	19	**55**
32	Childhood Infectious Diseases	9									2	**11**
33	Pediatric Surgery	17	1	7						1	5	**31**
34	Pediatric Cardiorheumatology	5										**5**
35	Pediatric Oncology			3					2			**5**
36	Pediatric Neurology									5	1	**6**
37	Pediatric Cardiology									3		**3**
38	Pediatric Anesthesiology and Resuscitation									1	2	**3**
39	Pediatric Traumatology and Orthopedics									2		**2**
40	Pediatric Endocrinology										1	**1**
41	Pediatrics	19	2	8	41					18	23	**111**
42	Neonatology	45	1	11						3	5	**65**
43	Epidemiology	28	2									**30**
44	Common Hygiene	23	1									**24**
45	Therapeutic Dentistry (General Practice Dentistry)	184		97							47	**328**
46	Pediatric Dentistry	10										**10**
47	Orthopedic Dentistry	4										**4**
48	Surgical Dentistry and Maxillo-Facial Surgery	24	29									**53**
49	Clinical Laboratory	1										**1**

	Medicine											
50	Coloproctology			1								**1**
51	Plastic Surgery			4								**4**
52	X-ray Radiography			5								**5**
53	Maxillo-Facial Surgery										5	**5**
	TOTAL:	**876**	**266**	**378**	**76**	**52**	**38**	**31**	**18**	**382**	**451**	**2568**

Annex 2. Clinical Sites located in Bishkek which signed contracts with medical universities

#	Clinical Site	Medical Universities (contract duration)				
		KSMA	KRSU	KSMIRCME	IHMS	AsMI
1	National Hospital	2015-2020	2015-2020	Under renewal	-	-
2	National Center of Cardiology and Therapy	2016-2021	2014-2019	-	-	-
3	National Center of Surgery	2016-2021	-	2017-2018	-	2016-2021
4	National Center of Oncology	2015-2020	2014	Under renewal	2015-perpetual agreement	-
5	National Center of Mother and Child Health	2011-2022	2017-2020	Under renewal	-	-
6	National Center of Phthisiology.	2013-2018	2014-2019	Under renewal	-	-
7	The Kyrgyz Research Center of Balneology and Rehabilitation Therapy	2015-2020	-	-	-	-
8	Republican Infectious Diseases Hospital	2015-2020	2013-2018	Under renewal	-	-
9	Republican Center of Mental Health	2016-2021	2012-2017	Under renewal	-	-
10	Republican Center of Dermatovenereology	2016-2021	2014	2014-2019	-	-
11	the Kyrgyz Research Center of Human Reproduction	2015-2020	-	2016-2021	-	-
12	City Clinical Maternity Home #2, Bishkek	2016-2021	2016-2021	Under renewal	-	2017-2022
13	Bishkek City Perinatal Center	2013-2018	2015-2020	2016-2018	-	-
14	Bishkek City Clinical Hospital#1	2016-2021	2014-2019	Under renewal	-	2016-2021
15	Bishkek City Clinical Hospital#6	2015-2020	-	Under renewal	-	2016-2021
16	Bishkek Research Center of Traumatology and Orthopedics	2016-2021	2014-2019	Under renewal	-	-

17	City Children's Clinical Hospital of Emergency Care	-	2014-2019	Under renewal	-	-
18	City Gynecological Hospital	-	2015-2020	2014-2019	-	-
19	Family Medicine Center #2, Bishkek	2016-2021	-	-	-	-
20	Family Medicine Center #3, Bishkek	2014-2019	2015-2020	-	-	-
21	Family Medicine Center #4, Bishkek	2014-2019	-	-	-	-
22	Family Medicine Center #5, Bishkek	-	2016	-	-	-
23	Family Medicine Center #6, Bishkek	2014-2019	2016	-	-	-
24	Family Medicine Center #7, Bishkek	2014-2019	2012-2017	-	-	-
25	Family Medicine Center #8, Bishkek	2014-2019	2011-2016	-	-	-
26	Family Medicine Center #9, Bishkek	2012-2017	2017	-	-	-
27	Family Medicine Center #10, Bishkek	2014-2019	2015	-	-	-
28	Family Medicine Center #15, Bishkek	2014-2019	-	-	-	-
29	Family Medicine Center #18, Bishkek	2013-2019	-	-	-	-
30	Dental Clinic #2, Bishkek	-	2014-2019	-	-	-
31	Dental Clinic #3, Bishkek	-	2014-2019	-	-	-
32	Dental Clinic #4, Bishkek	2017-2022	2014-2019	-	-	2017-2022
33	Dental Clinic #5, Bishkek	2017-2022	2014-2019	-	-	-
34	Dental Clinic #6, Bishkek	-	2014-2019	-	-	-
35	LLC Dentistry	-	2015-2025	-	-	-
36	NEWDENT Dental Clinic	-	2013-2018	-	-	-

37	the Kyrgyz Railways Administration Hospital	2017-2022	-	-	-	-
38	Clinical Hospital of the Department of Presidential Affairs and the KR Government	2016-2021	2016-2021	-	-	-
39	“Zdoroviye” Medical Center	2016-2021	-	-	-	-
40	Policlinic of the Ministry of Internal Affairs	2016-2021	2016-2021	-	-	-
41	Ambulance Station (Emergency Care Setting)	2015-2020	2014-2019	2014-2019	-	-
42	LLC "Viva profi"	-	-	2017-2021	-	-
43	«Kafmedcenter »	-	-	-	2009-perpetual agreement	-
	Total	**34**	**31**	**7**	**2**	**5**

Annex 3. Clinical sites located in Osh which signed contracts with OshSU and the list of chairs

Clinical Site	Contract Duration	Names of available OshSU Chairs
Osh Interregional Clinical Hospital	2015-2018	Urology, Operative Surgery and Dermatovenereology, Surgical Diseases, Internal Diseases #3, Internal Diseases #1, Oncology, Ophthalmology and Otolaryngology, Dental Surgery with a course on Childhood, Neurology and Psychiatry, Obstetrics and Gynecology, Pediatrics #1 (8)
Osh Interregional Children's Clinical Hospital	2015-2018	Pediatrics #1, Pediatrics #2 (2)
Osh City Clinical Hospital	2015-2018	General Surgery, Traumatology, Radiology and Forensic Medicine, Oncology, Ophthalmology and Otolaryngology, Surgical Diseases (4)
Osh Oblast Dermatovenerologic Dispensary	2015-2018	Urology, Operative Surgery and Dermatovenereology
Osh Oblast Center of Mental Health		Neurology and Psychiatry
Osh City Children' Infectious Diseases Hospital	2015-2018	
Osh Oblast Maternity Home	2015-2018	
Osh Oblast Interregional Center of Oncology	2015-2018	Oncology, Ophthalmology and Otolaryngology
Academic Teaching Hospital of OshSU	2015-2018	
Osh City Perinatal Center	2015-2018	Obstetrics and Gynecology
Osh City Emergency Care Station	2015-2018	
"OshCardio" Medical Center in Osh	2015-2018	Internal Diseases #2
"Cardio-Asia" Medical Center in Osh	2015-2018	
Military Hospital, Osh	2015-2018	
Family Medicine Center#1 and its branches	2015-2018	Internal Diseases #3

Annex 4. List of medical universities' chairs located in health organizations

#	Clinical Site	Names of the KSMA Chairs	Names of the KRSU Chairs	Names of the KSMIRCME Chairs	Names of the AsMI Chairs	Chairs of the IHMS
1	National Hospital	Anaesthesiology and Resuscitation, Hospital Therapy, Occupational Pathology with a Course on Hematology, Neurology with a Course on Medical Genetics, Neurosurgery for pre- and postgraduate training, ENT diseases, Ophthalmology, Propaedeutics of Internal Diseases with a Course on Endocrinology, Urology and Andrology for pre- and postgraduate training, Surgical Dentistry and Maxillofacial Surgery, Propaedeutics of Surgical Diseases (12)	General and Intermediate Level Surgery, Hospital Surgery, Neurology and Neurosurgery, Ophthalmology, Otorhinolaryngology, Urology (6)	Anaesthesiology and Resuscitation, Neurology, Neurosurgery and Psychiatry, Specialized Surgical Care, Urology, Ophthalmology (5)		General Surgery and Urology

2	National Center of Cardiology and Therapy	Intermediate Level Therapy	Therapeutic disciplines #2, General Medicine specialty	Pulmonology		
3	National Center of Surgery	Hospital Surgery with a Course on Operative Surgery		Obstetrics and Gynecology, Anesthesiology and Resuscitation, Surgery (3)	Surgical Disciplines	
4	National Center of Oncology	Oncology, Radiology and Therapy, Maxillofacial Surgery, Hospital Therapy, Occupational Pathology with a Course on Hematology (4)	Oncology and Therapy, Radiology (2)	Oncology		
5	National Center of Mother&Child Health	Hospital Pediatrics with a Course on Neonatology, Intermediate Level Pediatrics, Pediatric Dentistry (3)		Obstetrics and Gynecology, Anesthesiology and Resuscitation (2)		
6	National Center of Phthisiology	Phthisiology	Phthisiology	Phthisiopulmonology		
7	Research Institute of Heart Surgery and Organ Transplantation			Anesthesiology and Resuscitation		
8	Republican Clinical Infectious Diseases Hospital	Infectious Diseases, Childhood Infectious Diseases (2)	Infectious Diseases	Infectious Diseases, HIV/AIDS		
9	Republican Center of Dermatovenereology		Dermatovenereology	Dermatovenereology		
10	Republican Center of Human Reproduction			Obstetrics and Gynecology		
11	City Perinatal Center	Obstetrics and Gynecology #1, Nursing Care(2)	Obstetrics and Gynecology, Pediatrics	Anesthesiology and Resuscitation		

12	City Clinical Hospital #1	Hospital Therapy, Occupational Pathology with a Course on Hematology, Intermediate Level Surgery, General Surgery with a Course on Combustiology (3)		Anesthesiology and Resuscitation, Endocrinology (2)		
13	City Clinical Hospital #6	Neurology with a Course on Medical Genetics, Family Medicine, Ophthalmology		Internal Diseases and Functional Diagnostics	Therapeutic Disciplines	
14	City Gynaecological Hospital			Obstetrics and Gynecology		
15	Bishkek Research Center of Traumatology and Orthopedics	Traumatology& Orthopedics and Extremal Surgery, General Surgery with a Course on Combustiology (2)	Traumatology, Orthopedics	Traumatology and Orthopedics		
16	City Children's Clinical Hospital of Emergency Care	Pediatric Surgery, Propedeutics of Childhood Diseases (2)		Anesthesiology and Resuscitation		
17	Clinical Hospital of the Department of Presidential Affairs and the KR Government	Family Medicine	Therapeutic disciplines #2, General Medicine specialty			
18	Republican Center of Mental Health	Psychiatry, Psychotherapy, Narcology	Medical Psychology, Psychiatry and Psychotherapy	Neurology, Neurosurgery and Psychiatry		
19	Clinical Maternity Home #2, Bishkek	Obstetrics and Gynecology #2	Obstetrics and Gynecology	Obstetrics and Gynecology		
20	Family Medicine Center #6		Radiology			

21	Family Medicine Center#7		Therapeutic disciplines #2, General Medicine specialty			
22	Family Medicine Center#8		Pediatrics			
23	«Professor Assymbekova' Clinic»		Obstetrics and Pediatrics			