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## The Effectiveness of Using Hospital-Replacing Technologies in Health-Care System Through the Example of a Big Town.

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### ABSTRACT

UNHS stimulated the development of hospital-replacing forms of medical care. Hospital-replacing technologies allow to increase the efficiency of using bed fund with no loss in quality of medical care. In this article, we studied the intensity of using a bed fund in day care hospitals in out-patient clinics and hospitals. A cross-sectional and full study was carried out in 60 medical organizations that provide hospital-replacement care in Almaty. The calculations of the indicators of bed fund were conducted in accordance with methods commonly accepted in medical statistics. Treatment coverage of the population in day care hospitals (per 1000 of population) – 53.7 in 2015. (39.4-2010), the average duration of treatment in DCH among the adults – 7.0 (2015), among children – 8.0 (2015). Bed support of population in day care hospitals was 7.3 per 10 thousand of population. (2010-5.1 per 10 thousand). The average absolute increase of beds in DCH equals to 105.6 beds a year. The absolute increase of DCH bed fund was 528 beds in 2015 (162 – 2011), the growth rate was 73.5% in 2015 (22.56%-2011). The analysis of the usage of bed fund in day care hospitals showed a high demand of this type of medical care to population.

**Keywords:** Unified national health system (UNHS), hospitalization replacement technologies (HRT), day care hospital, bed fund.

## INTRODUCTION

Modern Kazakhstan health care system is characterized by the active development of technological process. One of the main medical technologies is hospital-replacing care, in particular, organization of day care facilities in out-patient clinics, in hospitals and at home, which can ensure proper quality of patient treatment at a lower cost and efficient use of hospital beds [1,2].

Day care hospital is designed for conducting preventive, diagnostic, curative and rehabilitative activities to patients not requiring full-time medical surveillance, with the use of modern medical technologies in accordance with the standards and protocols [3,4].

Comprehensive, in-depth study of day care hospitals' activities on providing medical services to the population will let determine HRT economic effectiveness within UNHS, as well as develop recommendations on the improvement of these forms taking into account the place and role of day care hospitals in the system of providing medical care to population.

### **The aim of investigation**

Studying the intensity of using a bed fund of day care hospitals in Almaty (Republic of Kazakhstan).

### **The object of investigation**

Day hospitals, statistical data for 2010–15.

## MATERIALS AND METHODS

The investigation was based on the statistical data of Almaty city branch of RSE «Republican center of e-Health» of the MH of RoK, annual statistic reports of medical organizations. A cross-sectional and full study was carried out in 60 medical organizations that provide hospital-replacement care in Almaty.

The development dynamics of hospital-replacing forms of medical care to Almaty population for the period from 2010 to 2015 was analysed. The bed fund growth in DCH and the number of patients treated there in the studied period in outpatient and hospital organizations was analysed. The DCH bed coverage of 10 thousand of population was calculated. Calculations are summarized in the table. The degree of using DCH on the number of bed days and the average duration of treating adults and children in day care hospitals was studied. The analysis of time series was conducted in accordance with methods generally accepted in medical statistics.

## RESULTS

Day care hospitals of out-patient organizations are the massive forms of organization including all hospital-replacing technologies. Accordingly, monitoring of the development of hospital-replacing technologies in Almaty over the past years shows an increase of medical organizations providing HRC and the increase of day care beds in out-patient clinics and hospitals, which shows a high demand of HRT beds [5].

According statistical report for 2015 there are about 60 day care hospitals (in city only, without the regard of republican clinics), 39 of them operate in out-patient clinics, 21 – in hospitals. Taking into account the development dynamics of the hospital there is a growth of DCH bed fund in out-patient clinics and hospitals from 718 (2010) to 1246 (2015). In day care hospitals of out-patient clinics there were 850 beds in 2015, and in hospitals – 396 beds.

In 2015 day care bed support of population was 7.3 per 10 thousand of population. Meantime, the analysis of the dynamics of day care bed support shows that in 2010 this indicator was significantly lower and constituted 5.1 per 10 thousand of population (Table 1) and there is a steady growth of this indicator (to 43.1%).

Treatment coverage of population in day care hospitals (per 1000 of population) increased from 39.4 (2010) to 53.7 (2015), the average duration of treatment in day care hospitals working-age population was 7.0 (2015), among children – 8.0 (2015).

Over the past few years the growth of DCH network took place in 2012 in hospitals more intensively than in out-patient organizations.

The tendency of increase of the number of DCH beds testifies the demand of hospital-replacing types of medical care which is one of the most important reasons of improving HRT in our Republic (Figure 1).

The total number of patients treated with hospital-replacing technologies for 2015 amounted to 67 802. The number of patients treated in DCF of hospitals over the past years has a tendency of growth.

It should be noted that the specific weight of hospitalization in day care facilities of out-patient clinics were always significantly higher than in DCF of hospitals (table 2). So, in 2015 47129 (69%) patients were treated in day care facilities of out-patient clinics, 20673 (30.49%) patients were treated in day care facilities of hospitals.

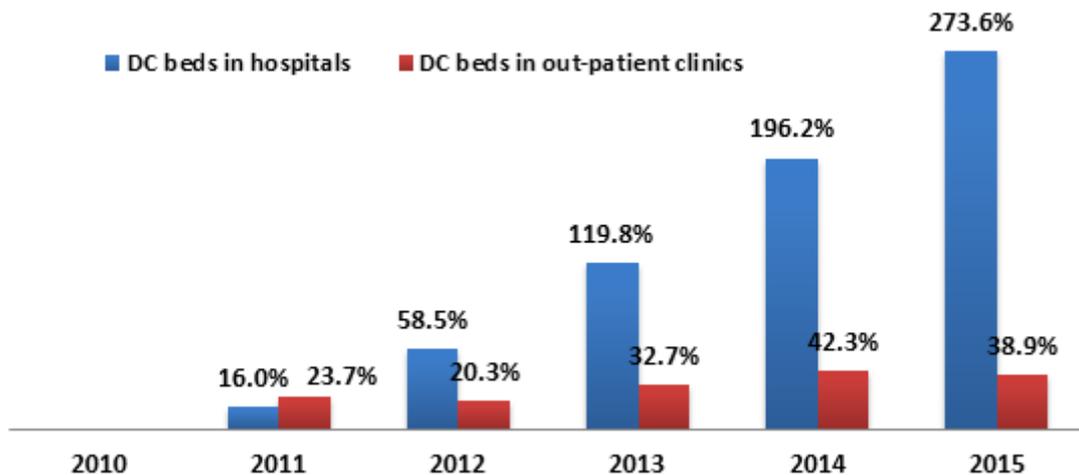
The number of patients treated at home in 2015 was 20441, the average duration of treating the adult patients was 11.9, pediatric patients – 5.8, home treatment coverage of population was 12.2 per 1000 of population.

According to table 4 there is a dynamics of growth of day care facilities' bed fund, as in 2015 the absolute increase constituted 528 beds compared to 2010, the increase rate of which equals 73.5% (2015).

**Table 1: Dynamics of the bed fund growth of day care hospital in Almaty for 2010-2015.**

years	Organizations with day care hospitals*	Out-patient clinics	hospitals	The number of beds in day care hospitals:	Out-patient clinics	hospitals	Bed support of population in day care hospitals (per 10 thousand of population)
2010	52	35	17	718	612	106	5.1
2011	55	37	18	880	757	123	6.1
2012	55	36	19	904	736	168	6.1
2013	58	39	19	1045	812	233	6.9
2014	58	39	19	1185	871	314	7.2
2015	60	39	21	1246	850	396	7.3
PK, 2014	1866	1430	436	22964	14002	8962	13.1

**Figure 1 Dynamics of growth rate of DCH beds in out-patient organizations and hospitals in 2010-15.**



**Table 2: Hospitalization level and the indicators of day care facility activities in Almaty for 2010-2015.**

years	The number of patients treated in day care facilities:	out-patient clinics		hospitals		Treatment coverage of population in day care facilities (per 1000 of population)	The average duration of treatment in day care facilities of clinics	
		abs.	Specific weight	abs.	Specific weight		adults	children
2010	55664	42968	77.19%	12696	22.81%	39.4	8	7.4
2011	55581	45146	81.23%	10435	18.77%	38.3	8	9.3
2012	52132	39614	75.99%	12518	24.01%	35.3	7.9	7.8
2013	55987	41332	73.82%	14655	26.18%	37.1	7.4	7.8
2014	62734	45597	72.68%	17137	27.32%	38.7	7.2	8
2015	67802	47129	69.51%	20673	30.49%	40.5	7	8
<b>RoK, 2014</b>	927836	584724	63.02%	343112	36.98%	53.7	-	-

**Table 3: The activity indicators of day care facilities in Almaty from 2010 to 2015**

years	Organizations providing home care:	The number of patients treated at home	The average duration of treatment at home		Home treatment coverage of population (per 1000 of pop.)
			adults	children	
2010	31	18587	6.9	6	13.1
2011	33	20833	12.8	7.2	14.4
2012	32	18716	16.5	5.9	12.7
2013	34	16017	12.7	5.8	10.6
2014	34	18141	10.5	5.7	11.2
2015	36	20441	11.9	5.8	12.2
<b>RoK, 2014</b>	533	72880	-	-	4.2

**Table 4: The growth dynamics of bed fund of day care facilities in 2010-2015.**

years	t	beds	Absolute increase		Growth rate %		Rate of increase %	
			chained	basic	chained	basic	chained	basic
2010	1	718	-	-	-	-	-	-
2011	2	880	162	162	122,56%	122,56%	22,56%	22,56%
2012	3	904	24	186	102,73%	125,91%	2,73%	25,91%
2013	4	1045	141	327	115,60%	145,54%	15,60%	45,54%
2014	5	1185	140	467	113,4%	165,0%	13,4%	65,0%
2015	6	1246	61	528	105,1%	173,5%	5,1%	73,5%

**DISCUSSION**

It should be noted that in Kazakhstan, on age structure of population, the share of elderly patients is increasing, due to which there is a demand and a special attention is paid to medical care at home.

The analysis of using day care hospitals' bed fund showed a high demand of this type of medical care to the population, as the number of patients treated in DCH is increasing intensively, which is probably connected with the increase of availability. HRT coverage of population shows steady growth dynamics, which demonstrates a higher need of hospital-replacing care among population.

## CONCLUSION

From the implementation of UNHS, HRT development in Almaty is characterized by positive dynamics. The analysis of calculation of derived analytical indexes of time series shows that the average absolute increase of DCH beds in the city amounts to 105.6 beds a year, in DCH of clinics it amounts to 47.6 beds a year, in DCH of hospitals it equals to 58 beds a year. The main principle of forming bed network lies in obtaining maximum efficiency of bed operation by means of a high level of its specialization, principal equipping and intensive use.

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