

The Management of Hospital Admission at the City Cardiology Center

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ABSTRACT

This article aims to analyze the management of the hospital admission of cardiac patients and inpatient care at the admission department of the state utility company on the right of economic management “City Cardiology Center” in Almaty (hereinafter - the center).

Keywords: cardiology, admission department, hospitalization, self-referral, City Cardiology Center

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INTRODUCTION

Cardiovascular Diseases (CVD) represent one of the most challenging and significant issues globally. According to WHO report, the general mortality rate associated with CVD has decreased in most of the regions. The highest reduction was observed in low-, average and high-income countries that are not members of *Organization for Economic Co-operation and Development (OECD)* as well as in the high-income countries that are members of OECD, where the mortality rate decreased by 35% within the last 12 years, which is a significant result by itself. In other regions, the mortality rate associated with CVD decreased from 1% to 20%, whereas, in average, on the world scale there is 16% decrease observed (3). Adverse trends are aggravated by the fact that Kazakhstan being characterized by a particularly sharp increase in mortality rates among people of young working age. Moreover, the treatment of CVD remains expensive as well as further direct/indirect health care service expenses also remain significant [4,5]; therefore, the burden of CVD underlies socio-economic need to develop proper strategy and tactics in cardiology service as well as in emergence cardiac care.

Proper state policy in the prevention and treatment of CVD remains the most important issue in the health care systems worldwide (Starodubov V.I., Khalfin R.A., Kakorina E.P., Bockeria J.I.A., Oganov R.G., Cooper R, Fletcher G F., Balady G J). Nonetheless, with no epidemiological studies on medical care needs it is almost impossible to perform this task effectively. In its turn, data on medical care depend on many factors such as prevalence of risk factors, the dynamics of demographic data, detectability and specificity of diagnostic criteria used. Health care reforms in 1990s obviously introduced some changes into specialized medical

cardiac service [6]; nevertheless, it should be noted that none of the needs for specialized medical care at the outpatient level are reflected in any official state statistical data.

STUDY AIM

To investigate the management of hospitalization at the ER at the CCC in Almaty.

MATERIAL AND METHODS

archived data on inpatient care at the CCC, regarding the admission department: registration journals and patients’ medical records at Almaty hospitals for the period from 01.01-31.12 to 2014-2017 y. No. 001, approved by the order of the Minister of Health of the Republic of Kazakhstan dated November 23, 2010 Year No. 907 for the period 2014 - 2017.

Total analyzed cases: in 2014 – 12,129 emergency cases, in 2015 – 12,815 cases, in 2016 –14,725 cases, in 2017 –14,007 cases respectively.

RESULTS AND DISCUSSION

Cardiology admission department, serving in total 265 beds, is one of the main structural subdivisions of the CCC. Care provision at the Emergency Room (ER) is carried out around the clock, patients with following heart pathologies are received there: coronary heart disease (acute myocardial infarction, progressive angina, first-time angina, variant angina, acute coronary syndrome), cardiac rhythm and conduction disorders, hypertension, myocarditis and others. Two medical posts, a treatment room, a shock hospital ward and an isolator – all these represent a Cardiology ER.

Table 1: General structure of referral, hospitalization and refusal at the CCC in 2014-2017 years.

	Years	Ambulance		Health care facilities		Self-referral		Total	
		Count	%	Count	%	Count	%	Count	%
Referral	2014	9301	76,7%	1454	12%	1374	11,3%	12129	

	2015	9648	75,3%	1345	10,5%	1822	14,2%	12815	
	2016	14725	100%	10630	72,2%	1507	10,2%	14725	
	2017	9087	64,8	1701	12,3	3219	22,9	14007	
Hospitalization	2014	6755	72,6%	1024	70,2%	1076	78%	8855	73%
	2015	6930	72%	940	70%	1368	14,8%	9238	72%
	2016	10765	73,1%	7747	72%	1007	9,4%	19519	73,1%
	2017	9087	65	1701	12	3219	23	14007	75,6%
Refusal	2014	2546	27,4%	430	29,6%	298	21,7%	3274	27%
	2015	2718	28%	405	30%	454	25%	3577	28%
	2016	3960	26,9%	2883	73,8%	500	12,6%	7343	26,9%
	2017	2158	63,3%	480	14,1%	768	22,6%	3406	24,3%
Withdrawal	2014	1764	19%	300	20,6%	194	14,1%	2258	18,6%
	2015	1955	20,3%	273	20,3%	310	17%	2538	19,8%
	2016	2942	19,97%	2181	74%	379	13%	5502	19,97%
	2017	1605	66,5%	328	13,6%	482	19,9%	2415	17,3%
Non-profile	2014	496	5,3%	89	6,1%	90	6,5%	675	5,5%
	2015	475	5%	94	7%	124	6,8%	687	5,4%
	2016	734	4,97%	472	64,4%	89	12,1%	1295	4,97%
	2017	325	48,4%	96	14,3%	251	37,3%	672	6,8%
Self-refusal	2014	219	2,3%	30	2%	9	0,6%	258	2,1%
	2015	250	2,6%	38	2,8%	11	0,6%	300	2,3%
	2016	236	1,6%	195	82,6%	25	10,6%	456	1,6%
	2017	200	73,8%	37	13,6%	34	12,6%	271	1,9%
Transfer	2014	67	0,7%	11	0,75%	5	0,4%	83	0,7%
	2015	38	0,4%	4	0,3%	9	0,5%	51	0,4%
	2016	30	0,2%	26	86%	2	7%	58	0,2%
	2017	28	66,7%	6	14,3%	8	19%	42	0,29%

As can be seen from the Table 1, there is a slight increase in the number of referrals to the ER from 14,725 to 14,007 in 2016 and 2017 respectively, in particular, greater for 718 patients. There were 3,406 refusal cases in 2017 in comparison to 3,960 in 2016 year. According to the data, the majority of referrals was received by ambulance and comprised 9,648 cases in total, which represents 75,3% from total referrals in 2014. Moreover, 1,345 cases (10,5%) were received by healthcare facilities; self-referrals represented 11,3% (1,822 patients). The patients' transfer from healthcare facilities reduced by 100 cases, but there was an increase in ambulance and self-referrals, by 346 and 448 respectively.

Furthermore, altogether 3,577 (28%) patients were not admitted; in particular, 28% (2,718 cases) were received from ambulance, 30% (405) from health care facilities, 25% (455 cases). In 2014, in total 27 % (3,274 cases) were withdrawn, in particular, 27,4 % (2546 cases) received by ambulance, health care facilities- 29,6% (430 cases), self-referral -21,7 % (298 cases). The number of withdrawals has

increased by all categories except cases received from medical care facilities. The percentage numbers are comparable, except self-referrals, where there was a 3,3% increase.

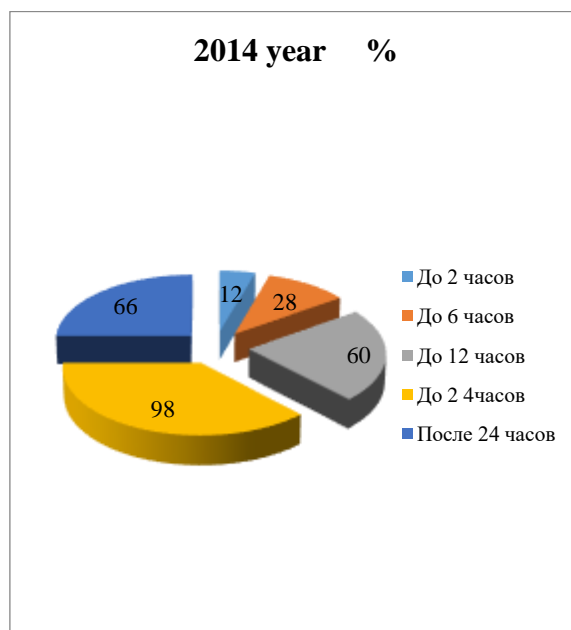
There were 19,8 % (2538 cases) in total who did not need hospitalization to the ER, in particular, 20,3% (1955 cases) received by ambulance; 20,3 (273 cases) by medical care facilities, self-referrals 17% (310 cases). There were 18,6% (2258 cases) of withdrawals in total; in particular, there were 20,6% (300 cases) received from health care facilities, through self-referrals 14,1% (194 cases). Therefore, there was an increase in the number of cases that were withdrawn from hospitalization through other categories, health care facilities being an exception. Furthermore, the majority of the withdrawn (77% i.e. 1,764 cases) were received by ambulance Overall, the number of admitted cases was 9,238 (8,855 cases in 2014 year); in consistence with the increase in the number of referrals there was an increase in the number of hospitalization cases (See Table 1).

Table 2: Hospital admission by different disorders for the period of 2014-2015 yy.

Nosology	2014 y		2015 y		2016 y		2017 y	
	Abs	%	Abs.	%	Abs.	%	Abs.	%
Acute Myocardial Infarction (AMI) (with Q-wave-107, without Q-wave-165)	348	3,9%	272	3%	388	3,61%	742	6,9%
Acute coronary syndrome	6522	73,6%	7 635	82,6%	8342	77,5	7629	71,7%

with ST-segment elevation- 936; without elevation -6 699)						%		
Unstable angina pectoris	1465	16,5%	857	9,3%	1414	13,1%	1731	16,3%
Exertional angina	66	0,7%	131	1,4%	171	1,6%	240	2,2%
Arterial hypertension	310	3,5%	218	2,3%	215	2,0%	203	1,9%
Rhythm and conductance disturbance	47	0,5%	30	0,3%	87	0,81%	48	0,4%
Non-rheumatic myocarditis	26	0,3%	23	0,2%	23	0,31%	12	0,1%
Cardiomyopathy	14	0,1%	18	0,19%	21	0,20%	25	0,2%
Other	57	0,6%	54	0,6%	84	0,78%	38	0,3%
Total number of hospitalization	8855		9238		10765		10601	

The analysis of the data above showed that there was a decrease amongst non-rheumatoid myocarditis (See Table 2) decrease in the number of state-funded admissions with AMI from 1,272 to 272 cases in 2015 year. There was a



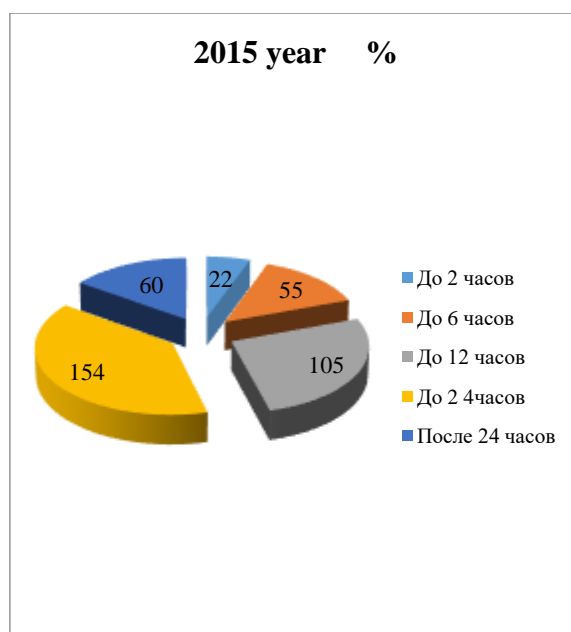


Figure 1: Admission timing with myocardial infarction

Table 3: The structure of refusals by different nosology in 2014-2017 yy.

Nosology	2014 y		2015 y		2016 y		2017 y	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Exertional angina	1610		1725		1758	44	1779	
Arterial hypertension	625		646		647		536	
Rhythm disturbance	65		94		118		103	
NSD	301		317		324	8%	234	
Alcoholic intoxication	37		39		41		31	
Intercostal neuralgia	74		89		92		86	
Anemia	24		31		30		30	
Respiratory disorders	41		63		77		45	
Urinary system disorders	20		21		28		8	
Endocrine disorders	19		22		20		20	
GIT disorders	37		35		40		32	
AMI acute phase	31		58		85		45	
Other nosology (including 201 self-refusal from the admission)	390		437		700		457	
Total	3274		3577		3960		3406	

As can be seen from the data above, there was an increase in the number of withdrawals (2,538/2258) in all categories amongst those who referred to ER at CCC. Moreover, the majority of cases of withdrawals (77%, i.e. 1,955 cases) was received by ambulance; in 2014 the number of total refusals taken by ambulance reached 78,1% (1,764 cases) (See Table 3).

CONCLUSION

As the data above show, in comparison with 2016, the admission level to the ER at the City Cardiology Centre reduced by 718 cases (14,007 cases in 2017 year; 14,725 cases in 2016 year; 12,815 cases in 2015 year, 12,129 cases in 2014 year). In consistence with that, there was a decrease in the number of admissions by 164 cases (10,765 cases in 2016

year, 10,601 cases in 2017 year, 9,238 cases in 2015 and 8,855 cases in 2014 year). The majority of withdrawals was received by ambulance, in particular, there were 1,605 cases (2,181 cases in 2016), which in turn represented 66,5% of the total number of those, who did not need the hospital admission. The number of total refusals reduced for 554 cases (3,960/3,406 cases) except self-referrals, where there was an increase by 191 case (577/768 cases). Furthermore, the number of self-referrals increased by 631 case and thereby the number of the hospitalized cases also increased, in particular, by 440 case (2,588 case in 2016 year, 3,219 case in 2017 year and 2,451 case in 2011). Finally, there was a decrease in hospitalization level (2,942/2,415 cases) in almost all categories, self-referral being an exception, where the admission level increased by 100 cases.

REFERENCES

1. Cardiovascular risk;Rupert A. Payne; Br J Clin Pharmacol / 74:3 / 396– 410;DOI:10.1111/j.1365-2125.2012.04219.x;20 February 2012
2. Worldwide disparities in cardiovascular disease: Challenges and solutions;Ike S. Okwuosa , Sabra C. Lewsey, Tolulope Adesiyun, Roger S. Blumenthal,Clyde W. Yancy; January 1,2016;Volume 202,Pages 433-440 International Journal of cardiology
3. Cardiovascular disease burden:evolving knowledge of risk factors in myocardial infarction and stroke through population-based research and perspectives in global prevention;Gustavo B. F. Oliveira, Alvaro Avezum and Leonardo Roeber;Research Division, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil,Clinical Research Center, Federal University of Uberlândia, Minas Gerais, Brazi PERSPECTIVE published: 13 August 2015 doi: 10.3389/fcvm.2015.00032; Frontiers in Cardiovascular Medicine | www.frontiersin.org August 2015 | Volume 2 | Article 32
4. Fox K.A., Steg P.G., Eagle K.A. et al. Decline in rates and heart failure in acute coronary syndromes, 1999-2006 // Journal of the American Medical Association. – 2007. – Vol. 297, №17. – P. 1892-1900.
5. Redfern J., Hyun K., Chew D.P. et al. Prescription of secondary prevention medications, lifestyle advice, and referral rehabilitation among acute coronary syndrome inpatients: results from a large prospective audit in Australia and New Zealand // British Medical Journal: Heart. – 2014. – Vol. 100, №16. – P. 1281-1288.
6. Nguyen T.N., Abramson B.L., Galluzzi A. et al. Temporal Trends and Referral Factors for Cardiac Rehabilitation Post-Acute Coronary Syndrome in Ontario: Insights from the Canadian Global Registry of Acute Coronary Events // Canadian Journal of Cardiology. – 2013. – Vol. 29, №12. – P. 1604-1609.