

PHARMACOEPIDEMOLOGICAL AND PHARMACOECONOMIC ESTIMATES OF A DRUG FORMULARY BASED ON THE MODEL OF A CLINIC PROVIDING HIGHLY SPECIALIZED MEDICAL CARE

This study provides ABS analysis of delivered health services within the context of highly specialized medical care in the National Research-Medical Centre and in the National Research Centre for Maternity and Childhood in 2010 (Kazakhstan). The most expensive group of medications in “NRMC” is the group of essential medications in all the ABC groups. The most expensive group of medications in “NRMC” is the group of essential medications in all the ABC groups. The analysis of allocation of medications in “NRMC” found that mid-expensive (B-group) and vital (V-group) drugs are the most demanded.

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Introduction

Social-economical transformations caused by USSR collapse and market economy transition have changed radically the drug supply (DS) system and have determined fundamental reformation of the state DS of the population of the Republic of Kazakhstan (Kasimova and Kuznetsova, 2002).

Current DS system requires further improvement due to the following issues: high cost of the drugs in government procurements; low share of drugs produced by the domestic pharmaceutical companies; occurrence of cases of inappropriate storage conditions of drugs, etc. (Murzahmetov et al.).

The paper describes the pharmacoepidemiological and pharmacoeconomic evaluation of a drug formulary based on the model of a clinic providing highly specialized medical care in Kazakhstan.

Materials and methods

The analysis of delivered health services within the context of highly specialized medical care (HSMC) in Republic State Enterprise “National Research-Medical Centre” of the Ministry of Health of the Republic of Kazakhstan (RSE “NRMC”) and in JSC “National Research Centre for Maternity and Childhood” in 2010 detected that the major accent here is on the sphere of cardiac angiosurgery. The estimates of drug supply in health care organizations were studied.

Results and discussion

Detailed analysis of delivered health services within the context of highly specialized medical care in the sphere of cardiac angiosurgery detected the following: cardiac artery bypass graft (CABG) takes the major part of cardiac angiosurgery - 55.3%, it is followed by cardiac muscle and its components' congenital defects elimination (32.9%), permanent cardio stimulator insertion (7.7%), valve replacement (2%), aorta defect elimination (1.2%), and valve plastic reconstruction (0.9%) completes the list.

From the available sources, we examined a medication supply for the highly specialized medical care delivery in the RSE “NRMC” in 2010 for cardiac artery bypass graft,

angioplasty with stenting, aorta valve replacement with the use of tissue implant, and other aorta valve replacement.

Analysis showed the major amount of money was spending to purchase the main medications. Among the major medications the most expensive drugs were actovegin, cefoperazone, enoxaparin. Among the surgery medications the most expensive drug was tachocomb.

For angioplasty with stenting there were used the following most expensive major medications: enoxaparin, iohexol, iopromide, fondaparinux, and the least expensive were nitroglycerin, furosemide, and nebivolol. Among the surgery medications sevoflurane was expensive drug; neostigmine, diphenhydramine, and atropine were inexpensive drugs.

The aorta valve replacement with the use of tissue implant used the following expensive major drugs: anti-D immunoglobulin, levofloxacin, enoxaparin; and the least expensive ones - isosorbide, drotaverine, phenobarbital, and procaine ethanol. Among the surgery medications, albumins and collagen-trombone plates were among the most expensive drugs.

For the other aorta valve replacement, enoxaparin, nadroparin calcium, cefuroxime, levofloxacin, clarithromycin were among the most expensive among the major medications; while isosorbide mononitrate, neostigmine methyl sulphate, papaverine hydrochloride were the least expensive among the major medications. In the group of surgery medications, albumins and collagen-thrombin sheets were highly expensive.

In accordance with the above factors, we conducted ABC-analysis of the investigated clinics. Group A virtually excluded so called specific line drugs, which directly influence circulatory system; the group consisted of medications providing support to physiological state of the organism. Meanwhile, group C included the majority of specific line drugs.

Virtually analogous picture can be observed in the ABC-analysis of medications used for the HSMC in the NRCMC. Appealingly, this fact is related to the tactics of patient preparation to a surgery within the context of highly specialized medical care that is directed to stabilize vital systems before delivering medical services, and preventive treatment of complications in post-surgery period.

In such a manner, we can see the evenly distributed medications regardless to the significance of groups. Even the group A includes medications with insufficient degree of evidence. This fact once again indicates on the need of consistent cooperation between the drug formulary commission and expert group while developing the list of medications for the guaranteed volume of free medical care.

The ABC-analysis data for pharmacoepidemiological and pharmaco-economic evaluation of the drug formulary based on the model of a clinic providing highly specialized medical care is provided in the Table 2.

TABLE 2. ABC-ANALYSIS DATA OF THE MEDICATION SUPPLY IN THE RSE “NRMC” IN 2010

Medication groups		Group costs (mln tenge, KZT)	Medication quantity	Share of the cost (%)
A	V	11.1	6	24.5
	E	12.7	3	28.0
	N	12.6	3	27.8
B	V	0.8	1	1.8
	E	1.7	2	3.7
	N	0	0	0
C	V	2.2	40	4.9
	E	3.1	46	6.8
	N	1.1	31	2.4

As we can see from the Table 2, the most expensive group of medications in RSE “NRMC” was the group of essential medications in all the ABC groups. According to the

fact, the group of vital drugs for HSMC loses its relevancy to patients to some extent; because HSMC category implies the change of patients' quality of life, that is elimination or optimal improvement of major disease state.

The analysis of allocation of medications in JSC "NRCMC" revealed the mid-expensive (B-group), vital (V-group) drugs were the most demanded. This is due to the fact that specification of patient treatment in neonatology with HSMC is related to medications constantly used to support body functions.

As a result of conducted analysis we can answer the following questions: whether the money are efficiently spent on drugs in the particular health care organization?; what steps are necessary to rationalize drug purchases?; what drugs should be considered first for inclusion to the drug formulary (usually class A)?; whether the financial expenses correspond to the data of disease structure analysis?

The method of ABC/VEN-analysis examined the quality of health care organizations' proposals and discovered the main factors decreasing medical and economic effectiveness of pharmacotherapy.

TABLE 3. ABC-ANALYSIS DATA OF THE MEDICATION SUPPLY IN THE JSC "NRCMC" IN 2010

Medication groups	Group costs (mln tenge, KZT)	Medication quantity	Share of the cost (%)
A	V	4.68	21
	E	5.77	44
	N	0.94	2
B	V	1.09	14
	E	0.94	53
	N	0.31	9
C	V	0.62	39
	E	1.09	65
	N	0.16	10

Cost-effectiveness analysis of medication purchase (ABC/VEN-analysis) allows revealing the highest-priority medications that are suggested to purchase first. The analysis is based on the list of medications (groups of medications) purchased by a health care organization during the last year.

This way, the analysis of effectiveness and transparency of formulary system by ABC/VEN-analysis in a health care organization needs to consider special features of drug supply for the HSMC:

- predominance of essential-group medications;
- possibility of the presence of the highly-expensive group, for example "orphan-medications" for orphan diseases;
- expandable materials accompanying medication supply in the HSMC.

The evaluation of a drug formulary based on the model of a clinic providing highly specialized medical care shows that the HSMC increases in international practice. Accordingly, drug supply, as well as its financing, aims to provide highly-effective medications before surgery and during operational activity.

Conclusion

The study of mechanisms to improve the formulary system (guidance system) and drug supply of healthcare providers allows us to conclude that the decision on whether the drug meets standard criteria and can it be included into formulary protocol, should be taken collaboratively by physician and pharmaceuticals of the hospital. The strategy of state

policy of drug supply for health care institutes plays a primary role to improve the efficacy of medication usage.

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