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## REGIONAL FEATURES OF PRICING IN THE IN COMPULSORY HEALTH INSURANCE ON THE EXAMPLE OF USING THE MEDICAL AND ECONOMIC STANDARD OF FEMORAL NECK FRACTURE (WITH THE INSTALLATION OF AN ENDOPROSTHESIS)

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*Based on the analysis of normative legal documents, scientific publications and research, the methodology for constructing a tariff based on a medical and economic standard for accounting and payment for specialized medical care provided in a round-the-clock hospital on the profile "traumatology and orthopedics" is considered. In the framework of the completed case of treatment of femoral neck fracture (ICD-10 code: S72.0) in the compulsory health insurance system, a comparative analysis of the cost of the tariff of the medical and economic standard was made with the cost of a similar diagnosis-related group (st 29.013) used for accounting and payment for endoprosthetics for femoral neck fractures.*

**Keywords:** medical and economic standard, diagnosis-related group, tariff calculation, compulsory health insurance

"Diagnosis-related group" (hereinafter as DRG) and "Medical and Economic Standard" (hereinafter as MES) as concepts used in the Russian system of organization and financing of health care are differentiated as follows: DRG is a group of diseases that is separated in each

class of the International classification of diseases and united by a similar level of medical care costs.

MES is a standard that defines the scope of diagnostic and therapeutic procedures, medical treatment, a list of medical devices, as well as the amount of appropriate financial support [1–3].

There are still many unresolved problems in implementing the payment models [3,4]

### MATERIALS AND METHODS

In a number of regions of the Russian Federation (e.g. Moscow) the accounting and payment of special medical care provided in the round-the-clock and day hospitals, are conducted in the framework of completed or aborted treatment cases in accordance with the Programme of state guarantees, as well as procedures and standards of healthcare delivery, which, together with the medico-economic standards are used to calculate the tariffs for such complex medical services. The tariffs for medical services in the CHI system are calculated in accordance with the Methodology for calculating the tariffs for medical care under

compulsory health insurance, specified by section XI of the Rules of compulsory health insurance, approved by Order of the Ministry of Health of the Russian Federation dated 28.02.2019 No.108N [5].

In accordance with clause 7 of art. 35 of Federal law No. 326-FZ of 29.11.2010, tariffs for payment of medical care include expenses for wages, charges on payroll, other payments, purchase of medicines, consumables, food, hospital linen, armamentarium, reagents and chemicals, other inventory, expenses for payment for laboratory tests and instrumental methods of diagnosis conducted in other institutions (if the medical organization does not have laboratory and diagnostic equipment), catering (if there is no organized food in a healthcare organization), expenses for communication services, transport services, utilities, works and services for the maintenance of property, expenses for rent for the use of property, payment for software and other services, social security of employees of medical organizations specified by the legislation of the Russian Federation, other expenses, expenses for purchase of fixed assets (equipment, production and household inventory) at cost up to one hundred thousand rubles per unit [6].

In accordance with p. 5.1.1 of the Tariff agreement for payment of medical care provided under the territorial program of the CHI of the city of Moscow, approved annually by the Government of Moscow, the proposals for making amendments to the list of simple, complex and comprehensive medical services by the types and profiles of medical care and indexation of tariffs for payment of medical care can be made by the parties to the Tariff agreement to the Commission for development of the CHI territorial program in accordance with the Procedure of sending the proposals for accounting of medical care to the working group on calculation and adjustment of tariffs in the compulsory health insurance system [7].

The calculation of tariffs for medical care includes the costs of medical organizations

directly related to the provision of the medical service and consumed in the process of providing it, as well as the costs necessary to ensure the activities of medical organizations as a whole, but not consumed directly in the process of providing the medical service:

- the cost of labor and charges on payroll are determined proceeding from the demand for the number of personnel taking direct part in providing of a medical service, and the average staff time for provision of the services (in the calculation of the tariff for a simple service) or services (when calculating the tariff for complex or comprehensive service) (section 1 of the process flow diagram), in accordance with the current system of remuneration [9];
- the cost of inventories (medications, necessarily used in the provision of a medical service – Section 2 of the process flow diagram; medical devices and supplies necessarily used in the provision of a medical service – Section 3 of the process flow diagram) are calculated based on the average multiplicity factor of application and the average application frequency on the basis of normative consumption volumes and actual volumes of consumption of inventories for last years;
- costs necessary to support the activities of the medical organization as a whole, but not consumed directly in the provision of a medical service, are calculated in proportion to the amount of time spent on providing the medical service (outpatient care) or in proportion to the number of bed-days (patient-days) provided in the process flow diagram for the comprehensive medical service (inpatient and in a day hospital), based on the data of the reporting form 14-F (CHI) "Data on receipt and expenditure of CHI funds by health organizations" [10].

Tariffs for payment for high-tech medical care in the CHI system of the city of Moscow for all medical organizations that provide the high-tech

medical care within the framework of the basic compulsory health insurance program, regardless of their organizational and legal form and departmental affiliation, are specified:

- in accordance with the standards of financial costs per unit of the high-tech medical care volume approved by the decree of the Government of the Russian Federation under the State Guarantee of Free Medical Care to the Citizens of the Russian Federation;
- based on Appendix No. 10 to the letter of the Ministry of Health of Russia [11];
- taking into account the application of the coefficient of differentiation for the city of Moscow for 2019, calculated in accordance with the decree of the Government of the Russian Federation [12].

According to the method of forming the tariffs for medical care in the CHI, the structure of tariffs under the basic program of compulsory health insurance includes expenses for wages and charges on payroll, the purchase of medicines and dressings, consumables, hospital linen, other inventory, food costs [13].

As an illustration, we present a scheme for calculating the costs in the tariff structure:

1. Calculation of personnel labour costs.
2. Medications = Maximum price with wholesale surcharge and VAT, RUB / Quantity in consumer

package / Dosage form, dosage × Frequency of delivery × Multiplicity of delivery × Qty.

3. Consumables = Price per package, RUB / Qty per package × Frequency of use × Multiplicity of use × Qty per a course.

4. Catering = Average frequency of use × Number of bed days × Cost of 1 bed day according to the diet.

5. Hospital linen. The cost of hospital linen is reduced to a standard unit based on the service life of this linen.

6. Other expenses = Amount of other expenses (according to form no. 14-F (CHI) for the 1st half year of 20\_\_\_), RUB / Number of bed days for the 1st half year of 20\_\_\_ (according to the personalized database of CHI AP AIS) × Number of days of treatment.

## RESULTS AND DISCUSSIONS

Here is one of the examples of successful implementation in the Russian Federation (Moscow) of the medical and economic standard (MES) for endoprosthesis replacement in case of femoral neck fracture (ICD-10 code: S72.0), developed by the Department of Health of the city of Moscow (with the involvement of the chief specialist – traumatologist-orthopedist). This medical and economic

Table 1

### METHODOLOGY FOR CALCULATING THE PERSONNEL LABOUR COSTS

Position	Average official salary per month, including charges on payroll (rubles)	Month working time fund (min)	Standard time for providing the medical service (min)	Personnel labour cost (rubles) (5) = (2) / (3) × (4)
1	2	3	4	5
1.				
2.				
–				
Total	x	x	x	

standard, developed on the basis of the standard of medical care, took into account current trends in the provision of medical care, detailing by items allowed for more accurate accounting of medical care costs and, accordingly, optimally calculating the tariff for medical services for endoprosthesis replacement in case of femoral neck fracture, taking into account the costs of medical personnel labor directly involved in providing medical care within a specific comprehensive medical service, as well as provide for the costs of new medicines, supplies and depreciation of medical equipment based on new technologies.

The MES process flow diagram developed by the chief specialist of the Moscow Department of Health, based on the standard of medical care approved by the Ministry of Health of the Russian Federation is used in the system of compulsory health insurance of the city of Moscow to calculate the tariff for a comprehensive medical service: "Femoral neck fracture (with the installation of an endoprosthesis)" for accounting and payment for specialized medical care provided in a round-the-clock hospital in the profile "Traumatology and orthopedics" as part of a completed case

of treatment of femoral neck fractures (ICD-10 code: S72.0). From 01.01.2019, this service was introduced into the Tariff agreement by the decision of the Commission for development of the territorial program of compulsory health insurance of the city of Moscow.

The cost of the tariff for the developed medical and economic standard is higher than the cost of a similar diagnosis-related group (st 29.013). In this case, the development of medical and economic standard for the level of the region of the Russian Federation allowed to accurately calculate the tariff for this service using the process flow diagram and considering the cost and modern implants, as well as to provide phase I of rehabilitation of the patient included in the structure of the finished case of treatment.

According to the Tariff agreement for the payment of medical care provided under the Territorial compulsory health insurance program of the Moscow region for 2020, the cost of endoprosthesis for femoral neck fractures (S72.0) was 74,962.94 rubles using the base rate of 23,797.76 rubles and the cost-intensity coefficient of 3.15, without taking into account

Table 2

### EXAMPLE OF THE STRUCTURE OF MES TARIFF "FEMORAL NECK FRACTURE (WITH THE INSTALLATION OF AN ENDOPROSTHESIS). ICD-10 CODE: S72. 0

No.	Name of item	Value, ruble
1	Labour costs	(20.48%) N1
2	Charges (30,2%)	(6.18%) N2
3	Medications	(2.83%) N3
4	Consumables	(63.47%) N4
5	Hospital linen wear	(0.10%) N5
6	Catering	(1.17%) N6
7	Other expenses	(5.78%) N7
8	Total	$N1+N2+N3+N4+N5+N6+N7=N8$
	Number of bed-days	10x
9	Average cost of a bed-day, rubles	$N8/x$

the management coefficient recommended by the Federal Compulsory Health Insurance Fund. Studies of site: [www.zakupki.gov.ru](http://www.zakupki.gov.ru) have shown that currently the average cost of an endoprosthesis is 86,355 rubles for purchases [14].

An example of the structure of the MES tariff "Femoral neck fracture (with the installation of an endoprosthesis). ICD-10 code: S72.0

Common points in the development of the MES (hip replacement) and a similar DRG for hip replacement are that "When forming the diagnosis-related groups within the framework of methodological recommendations for formation of methods of payment for medical care under the State guarantees program (SGP) based on groups of diseases, including diagnosis-related groups of diseases, the draft orders on Approval of medical care standards were used. Subsequently, when developing "Recommendations on ways to pay for specialized medical care in inpatient settings and in day hospitals based on groups of diseases, including diagnosis-related groups (DRG) and clinical-profile groups (CPG) at the expense of the compulsory health insurance system", all standards of medical care developed by the Ministry of Health of the Russian Federation were taken into account. The recommendations indicate that the calculation of the coefficient of relative cost intensity of DRG and CPG was carried out taking into account the cost of medical care standards specified by the Ministry of Health of the Russian Federation, as well as the cost of a set of medical services provided for diseases for which standards were not set. When calculating coefficients for diseases that do not have standards, the actual expenses of medical organizations for providing medical care for these diseases were taken into account" [15].

## CONCLUSION

The common points in MES and DRG are that the structure and content of medical and

economic standards and DRG groups is based on standards of medical care, taking into account the codes of diagnoses of diseases in the International classification of diseases (ICD-10).

Calculations of the tariff using the medical and economic standard for the example of hip replacement in case of the femoral neck fractures allow you to most accurately assess the working hours of medical personnel and the costs of providing the medical care taking into account the cost of modern implants, as well as to consider phase I of rehabilitation of the patient included in the structure of the finished case of treatment (phase I of rehabilitation in DRGs is not included).

It should be noted that the difference in the increase in the MES tariff relative to the corresponding DRG group for hip replacement in case of the femoral neck fractures (ICD-10 code: S72.0) allows you to compensate for the expenses of the medical organization for medical care, taking into account the constantly growing cost of implants (endoprostheses), selected individually (models: single-pole, double-pole, metal, metal-ceramic) under the clinical indications and depending on the age of the patient, as well as the use of other consumables and medications, inclusion of the first phase of necessary medical rehabilitation (this is the beginning of movements of the operated limb, physical therapy, massage, training to walk on crutches in the first days after surgery).

## REFERENCES

1. *Obukhova O.V., Bazarova I.N., Gavrilenko O.Yu. Problems of implementation of medical and economic standards in institutions providing inpatient medical care // Social aspects of population health: Information and analytical Bulletin. – M., 2008. – №3. – p. 7.*
2. *Avksenteva M.V., Gerasimova K.V., Zheleznyakova I.A. System of medical care in the Russian*

- Federation / ed. by V.V. Omelyanovsky. – Moscow: Nauka, 2019. – 181 p.
3. Sklyar T.M. *Medical and economic standards in the financing of hospitals // Chief Physician*. – 2011. – №2. – pp 46–51.
  4. Busse R., Schreyögg J., Smith P. 2006. *Editorial: Hospital payments systems in Europe // Health Care Management Science*. 9. 3: 211–213.
  5. Order of the Ministry of Health of the Russian Federation of 28.02.2019 No. 108n “On approval of the rules of compulsory health insurance” [Electronic resource]. – Available at Пpуказ: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_324740](http://www.consultant.ru/document/cons_doc_LAW_324740).
  6. Federal law No. 326-FZ of 29.11.2010 “On compulsory health insurance” [Electronic resource]. – Available at: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_107289](http://www.consultant.ru/document/cons_doc_LAW_107289).
  7. *Tariff agreement for payment for medical care provided under the territorial compulsory health insurance program of the city of Moscow for 2019*. [Electronic resource]. – Available at: <http://www.consultant.ru/cons/cgi/online183754#014975340894602707>.
  8. Order of the Ministry of Health of the Russian Federation dated 13.10.2017 No. 804n “On approval of the nomenclature of medical services” [Electronic resource]. – Available at: <https://minjust.consultant.ru/documents/37309>.
  9. Order of the Department of Health of Moscow dated 09.06.2012 №531 “On measures for the transition of medical organizations of the state health care system of Moscow to a system of remuneration other than the tariff system of remuneration of employees of state institutions of Moscow” [Electronic resource]. – Available at: <http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=MLAW&n=137053&dst=100001#0524139637606756>.
  10. Rosstat Order No. 258 of 17.04.2014 “On approval of statistical tools for organization of Federal statistical observation by the Ministry of Health of the Russian Federation in the field of compulsory health insurance” [Electronic resource]. Available at: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_162754/18ac14fc7f26889545b3ff32214aefe87e600d36](http://www.consultant.ru/document/cons_doc_LAW_162754/18ac14fc7f26889545b3ff32214aefe87e600d36).
  11. Letter of the Ministry of Health of the Russian Federation dated 23.12.2016 No. 11-7/10/2–8304 “On formation and economic justification of the Territorial State Guarantee of Free Medical Care to the Citizens of the Russian Federation for 2017 and for the planning period 2018-2019” [Electronic resource]. – Available at: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_210447/](http://www.consultant.ru/document/cons_doc_LAW_210447/)
  12. The Decree of the RF government dated 05.05.2012 №462 “On the procedure of distribution, granting and spending of subsidies from the budget of Federal Fund of compulsory health insurance to budgets of territorial funds of compulsory health insurance, for implementation of powers of the Russian Federation in the sphere of compulsory health insurance transferred to the state authorities of the regions of the Russian Federation”. [Electronic resource]. – Available at: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_129621](http://www.consultant.ru/document/cons_doc_LAW_129621).
  13. Eigel M.Ya. *New approaches to management accounting in healthcare // Competitiveness in the information society: the experience of the BRIC countries – M, The State University of Management, 2008. – p. 31.*
  14. *Unified Information System in Procurement* [Electronic resource]. – Available at: [www.zakupki.gov.ru](http://www.zakupki.gov.ru).
  15. Letter of the Ministry of Health of the Russian Federation dated December 20, 2012 No.14-6/10/2–5305 “On sending recommendations “Ways to pay for medical care under the State guarantee program based on groups of diseases, including diagnosis-related groups of diseases (DRG) ” [Electronic resource]. – Available at: <https://www.garant.ru/products/ipo/prime/doc/70207014>.