

## FOREIGN AND DOMESTIC EXPERIENCE OF ORGANIZING URGENT MEDICAL SERVICE

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**Abstract.** The development of functioning of emergency medical care is one of directions of national health care development. This article presents the results of a study of the organization of emergency medical care in different countries: both emergency and intensive care. Three models of ambulance organization are described, including sources of financing the provision of services, considered their advantages and disadvantages and conducted a comparative analysis of systems. The new model of the organization of the patient admission process in the emergency form of the polyclinic department according to the «cito!» based on domestic and foreign experience have been introduced. Significance of the study is defined by search for new approaches to organize delivery of health care to the population. The conducted study shows that introduction of the process approach results in effective interaction of all structural divisions of the facility for medical service delivery, which is one of the major factors for increasing patients' satisfaction.

**Keywords:** ambulance, process approach, emergency outpatient medical care, emergency medical care, emergency home care.

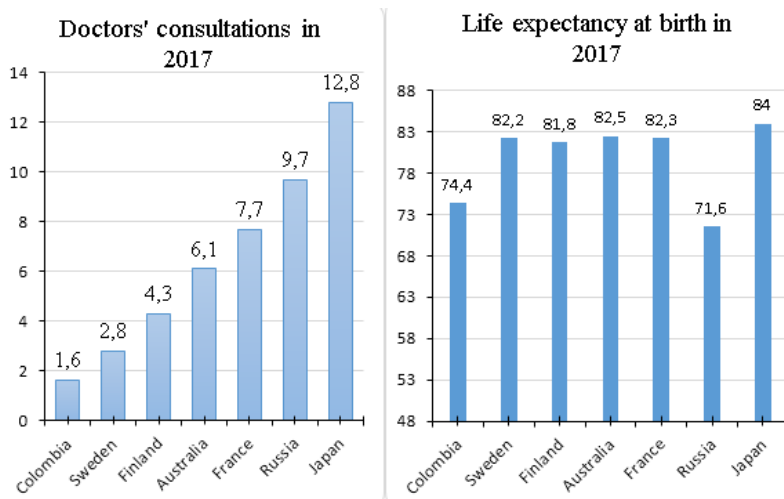


Figure 1. Life expectancy at birth and doctors' consultations (Doctors' consultations, Life expectancy at birth)

Based on the statistics given above, the number of visits to the medical organization and the life expectancy of the population do not correlate with each other. This suggests that with proper organization of the process of providing medical care, as well as with proper preventive and sanitary-educational work with the population, the patient does not need a large amount of medical services. A comparison of indicators between Sweden and Russia clearly demonstrates this: the average number of visits of doctors in the Russian Federation is higher, but the life expectancy is less. Therefore, it is important to establish clear criteria by which patient flow will be sorted. The solution to the problem of the timely provision of emergency and emergency medical care is different in different health care systems. Consider the best practices of different countries (García-Santillán, 2019).

### 2 Materials And Methods

There are three models of emergency care:

#### 1. American-British model

This model is used in many English-speaking countries: Ireland, Canada, Australia and New Zealand.

It distinguishes emergency room and urgent care. Let us see what is the difference between emergency and urgent care. Emergency service is provided in the event of a life-threatening patient 24

### 1 Introduction

In socially developed countries, such as the Russian Federation, Belgium, Switzerland, Japan, payment for the provision of medical services is partially or fully made by health insurance funds (The Federal Act, 2019). Thus, the patient does not pay for services directly from his own pocket and creates the illusion that medicine is free. The absence of restrictions leads to the fact that people are beginning to consume more medical services than they really need, which leads to an overload of medical facilities and, consequently, to an increase in queues. This particularly affects the work of emergency and emergency medical care, where the delay can cost a person life.

hours a day. Urgent care - in cases requiring immediate medical care, but not serious enough to threaten the patient's life. Most of the emergency calls are serviced by medical technicians. The difference between medical technicians and medical assistants is that in order to obtain a work permit from a medical technician, it is enough to complete courses ranging from 120 to 1,800 hours. The length of training is due to the different qualifications for emergency workers. Medical assistants, unlike paramedics, study longer - 3 years 10 months and can carry out the discharge of hospital sheets and prescriptions (The Federal State educational standards).

The ambulance crew consists, as a rule, of two people and is subdivided into three types:

- BLS-brigade (BasicLifeSupport - "basic life support support"). This is a team of two people, of which at least one has a first-level certificate.
- ILS-brigade (intermediate LifeSupport - "average level of support for life support"), which consists of two EMT-I physicians.
- ALS- brigade (AdvancedLifeSupport - "advanced support for life support"), consisting of two paramedics.

Responsibility for the choice of the brigade, which will go to the call, lies on the dispatchers of the emergency call-centers and is based on the severity of the case. If the emergency brigade's call

was unreasonable, the caller would have to pay for the trip entirely at its own expense (Eisvandi et al, 2015).

Emergency centers are often a separate structure and have their own building, but they can also be set up at large clinics. They set

their own working hours on their own and usually function only on weekdays. The process of emergency care (urgent care) is presented in detail in Fig. 2

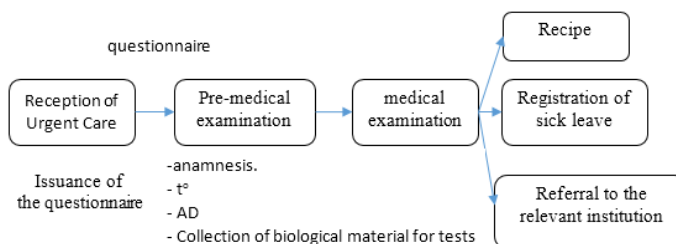


Figure 2. The process of providing emergency care in the American ambulance model

Initially, the patient arrives at the reception desk, where he is given a questionnaire in which the patient has basic information that helps the doctor in the future to make a diagnosis and make the right decision about the patient's treatment (Fig. 1). After filling in, the questionnaire is returned to the nurse at the reception and on its basis the cases are sorted. There is a conditional scale of differentiation of cases by urgency from 1 to 5, in accordance with which patients are provided with assistance, where 1 is the simplest cases, such as the common cold, and 5 are the most complex: imposition of gypsum, treatment of burns, etc. Already on the basis of the award category, a waiting list is formed. There is no binding to a specific office in the emergency medical center, as well as when providing emergency care, so the patient is sent to any free examination room, where reception will be carried out. Next, the patient undergoes a pre-medical examination, which is conducted by a nurse and includes the collection of primary history. After the final collection of primary information about the patient's condition, the doctor continues to conduct the reception. To establish the diagnosis, various rapid tests can be made, but if more complex studies are needed, for example, ultrasound or computed tomography, which are performed at an emergency center, the patient will be redirected to another institution, since such expensive equipment is most often not available.

The outcome of a visit to the emergency room may be a prescription for the purchase of a medicine, a sick-list or a referral to another medical facility. Providing medical care at home in this model is not provided. However, to date, paid services to call doctors at home are

becoming more popular. They are not covered by insurance companies and are fully paid from the patient's wallet. According to research by The International Healthand Travel Insurance Group, the cost of visiting a doctor is \$ 100-200 (How Much Does Healthcare Cost in the USA?).

Thus, the advantage of this model is the variety of services provided, which allows you to find an individual approach to the patient, but at the same time only part of the cost is covered by insurance, that is, the patient does not know in advance how much his visit will cost (Hassan et al, 2019).

## 2. European model

The European ambulance model is also divided into emergency and emergency care. Emergency care is carried out in hospitals where the patient is attached. Usually, the reception is performed by the doctor on duty, however, in some countries, the emergency patient is administered by a separate specialist. The phone number of the doctor on duty, the patient has the opportunity to call the number of the single number of the Rescue Service 112 or the number of the medical information service. They will prompt the location of the nearest duty therapist.

The European model of emergency care is presented in Fig. 3

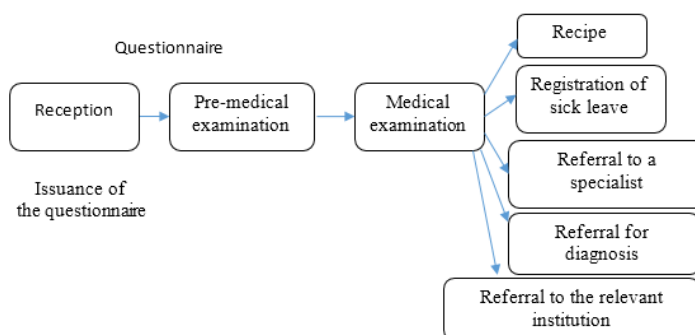


Figure 3. The process of emergency care in the European model

After arriving at the hospital, where the doctor on duty takes, the patient must fill out a questionnaire. The purpose of the patient survey is to save the doctor's time to collect primary information, which allows him to devote more time to actions that directly bring value to the patient.

Further, the patient is redirected to the doctor on duty. Patients are admitted on a first-come, first-served basis, but can be adjusted by a nurse depending on the urgency of the patient's case. Before

direct reception of the doctor on duty, as in the American model, there is a pre-medical examination, which is performed by a nurse attached to this doctor. She collects the remaining primary history of the patient and sends this information to the doctor on duty. After that, the patient is admitted. If the doctor on duty cannot independently diagnose and remove the patient's emergency condition, he can redirect the patient to additional diagnostic tests (ultrasound, ECG, CT), to narrow specialists of this clinic.

Emergency assistance (Krankenwagen) with paramedics in this country only serves as a taxi for seriously ill patients. Doctors (Notärzte) will not take you to the hospital, but they can provide primary emergency care on the spot. This allows you to optimize costs by reducing the use of a large number of highly paid specialists at home and an excessive number of hospitalized patients (Sohrabi, 2017).

The weak point of the European model is that it is not always possible to determine in advance which team is required by the patient. For example, in 2010 a case occurred in Sweden that went down in history as the “Emile effect”. Then the 23-year-old Emil Linnell was denied the call of the ambulance brigade. Subsequently, he was found dead in his own apartment. This story had a great public response and currently serves as an example of incorrect work of the SOS service. Therefore, in European countries pay special attention to the training of call-centers. For example, in Geneva in order to become an ambulance dispatcher you need medical education and at least 5 years work experience in the specialty.

### 3. Russian model

In Russian legislation No. 323-FZ “On the basis of protecting the health of citizens of the Russian Federation”, there are two forms of emergency care: first emergency assistance and first emergency assistance, and the general criteria for their differences are determined.

The composition of the ambulance brigade depends on the profile and severity of the case, so there are many options for staffing it.

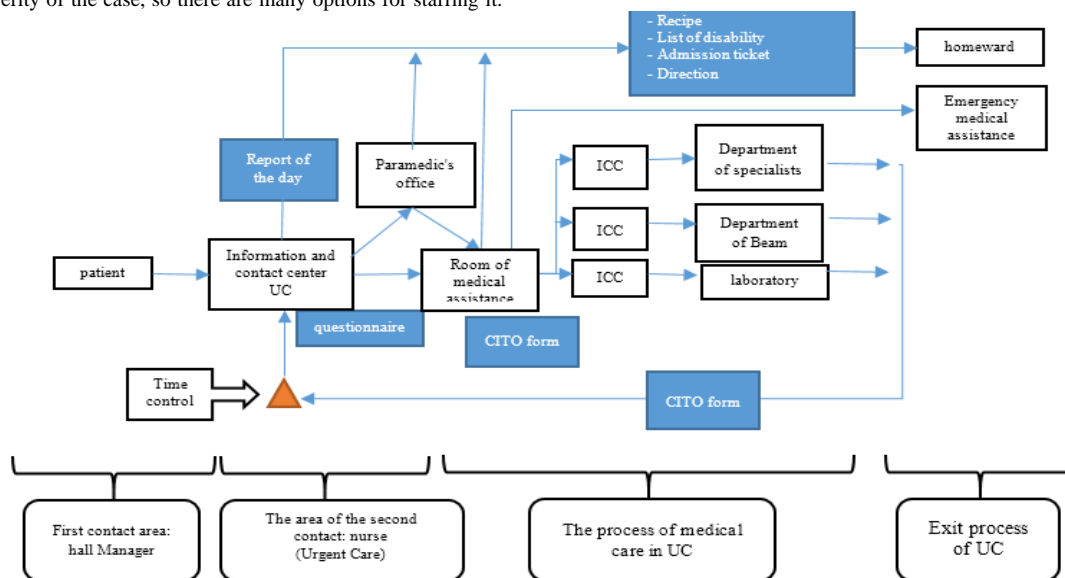


Figure 4. Emergency department organization process using cito model

After the patient enters the emergency room, patients are sorted into planned and emergency care. For this, the “10 seconds” rule was introduced, in which the medical registrar or the hall manager must decide where to send the patient or redirect him to who can do it. Such a quick response requires high professionalism from the employee, therefore, based on the frequently asked questions, an instruction was created on the recommended answers to them.

Next, the patient who needs emergency care is redirected to the reception of the emergency department. The nurse conducts a survey, blood pressure measurement and collection of a different primary history to determine his condition. At the next stage, the nurse sorts the patients according to the severity of the case and determines the order of their admission. Reception is carried out by the emergency doctor or paramedic. If the doctor has doubts when making a diagnosis, he redirects the patient for an additional examination to a specialist or for additional diagnostics. This can be done as planned - by making an appointment with a specialist, or out of turn, if there is a threat to life. For the latter case, the

According to the Order of the Ministry of Health of the Russian Federation of January 22, 2016 No. 33n “On Amendments to the Procedure for Providing Emergency, including Emergency Specialized Medical Care, approved by Order of the Ministry of Health of the Russian Federation of June 20, 2013 No. 388n”. Each clinic decides on what grounds to divide patient flows by urgency into planned, emergency and urgent care on the basis of №323-ФЗ “On the basis of health protection of citizens of the Russian Federation” and the Decree of the Government of the Russian Federation of 06.03.2013 No. 186 “On approval of the Rules assistance to foreign citizens on the territory of the Russian Federation”, as well as depending on their equipment and load.

After the formation of an emergency department in “University Hospital” of Kazan Federal University, there were two main difficulties: interaction with narrow specialists and the complexity of controlling the entire process. Specialists did not want to interrupt the admission of planned patients to examine patients from the emergency department. At the same time, by Order of the Ministry of Health of the Russian Federation No. 33n “On Amendments to the Procedure for Providing Emergency, including Emergency Specialized, Medical Care” emergency medical care must be completed within 2 hours. People, not waiting for a timely reception, went home or went to complain to the administration. Creating windows in the schedule allowed doctors to find time for such patients, and the “cito!” model was introduced to control the process (Fig. 4).

“cito!” system was developed. The essence of this system is that “cito!” is written for a referral to a specialist or for additional diagnostics (from the Latin “urgently”). This signature ensures that the patient will be accepted by the specialist out of turn.

After making the diagnosis and determining the further course of treatment, the patient should return to the head of the department. This is necessary in order to track the final result and make sure that the patient has successfully passed all stages. If the time for receiving an urgent patient has exceeded an hour, the department manager checks to determine the reasons for the delay.

### 3 Findings

The examined models of ambulance organization are constantly changing and improving, they are adjusted to the modern needs of patients. However, today each model has both a number of advantages and disadvantages. We will conduct a comparative analysis of ambulance models (Table 1).

Table 1. Comparative analysis of ambulance models

Advantages	Disadvantages
American model	
In case of an unreasonable call, the patient must pay the bill for the services rendered independently	Low requirements for training call center dispatchers
Using advanced technology to provide medical care	Calling a doctor at home is for a fee, even for socially unprotected layers of citizens
The waiting time for the arrival of ambulance should not be more than 8 minutes	High cost of health insurance (12%, which is 2 times more than in Russia)
	The inability to provide first aid on site by highly qualified personnel
European model	
The waiting time for the arrival of ambulance should not be more than 10 minutes	Low differentiation of brigades
High requirements for training call center employees	High cost of health insurance (13% -15%, which is 3 times more than in Russia)
Emergency care at home is provided only to those who find it difficult to move independently.	Lack of criteria for emergency and emergency care
Barriers to provide unreasonable calls (fines, pay for a call at your own expense, change insurance conditions)	
Russian model	
Differentiation of brigades not only by the complexity of the case, but also by the profile	Lack of generally accepted criteria for the division of emergency, emergency and planned assistance
Free medical care for all categories of citizens	Poor training for call center dispatchers, especially for emergency care.
May provide expert medical assistance on site	The absence of a valid mechanism of action, in order to prevent excess patients from getting into an ambulance
Low cost of health insurance relative to other models (5.1% of salary)	

Based on the analysis performed, it is worth noting that there are problems that combine all the models presented above. For example; the lack of clear criteria for the separation of emergency and emergency ambulances. Therefore, the patient is forced to independently intuitively determine the degree of urgency of his case. This leads to the fact that patients do not get to the right department and slow down the process of providing medical care, increasing the queue.

From this problem arises another more serious problem. Using the absence of this criterion, patients with emergency and planned assistance deliberately falsely turn to emergency departments in order to pass the necessary tests and examinations free of charge and quickly, thereby overloading the capacities of these departments. In 2014 the number of unsuccessful calls was more than 2 million, which is 4.7% of the total number of departures, according to Rosstat statistics (Shlyafer, 2016).

#### 4 Conclusions

As for the model of organization of ambulance in Russia, it is worth noting that the great advantage of this model is the strong differentiation of emergency teams according to the profile of the ambulance station and the urgency of the case. However, due to the poor training of dispatchers of call-centers for emergency and emergency assistance, this advantage is not fully used.

Summing up, it is worth saying that in spite of the fact that the organization of the process of providing emergency and emergency assistance in each model is significantly different, there are a number of problems that unite them. Perhaps the further transfer and integration of advanced foreign and domestic experience will allow us to jointly solve these problems, as well as private problems that are found only in a particular model.

#### 5 Summary

The subject of the article is organizing urgent medical service. First of all, authors study advantages and disadvantages of three different models. Then they propose their own "cito!" model and made comparative analysis. The article states that transferring foreign experience could help to solve problems in urgent services.

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