Research Article

The Features of the Process Approach in the Implementation of the Project «New Model of Medical Organization which Provides Primary Health Care»

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ABSTRACT

In order to start optimization and structural transformations, the external (questionnaires of patients, n=200) and internal audit (time-related studies, n=186) of the outpatient clinic participating in the implementation of the priority project «Creating a new model of primary health care». For this purpose, 5 interrelated processes are identified in which the patient participates in the receipt of primary health care: 1 process – «Making an appointment with the doctor»; 2 process – «Registration»; 3 process – «Waiting for reception»; 4 process – «Medical care of the patient». 5 process – «Analysis of the nearest and remote end points». It is shown that there is a need in the outpatient clinic for information and technical improvement of the polyclinic's Internet portal; need to improve sanitation in public places; optimizing the activity of outpatient doctors to reduce waiting times in the queue (optimizing the workplace, analyzing the workload of medical personnel, reducing the time spent on medical documentation, personalized approach to patients). Overall, 82,4% of patients were satisfied with the work of the polyclinic, assessing it as «good» (76,5%) or «excellent» (5,9%). In the future, it is planned to monitor morbidity, disability and mortality indicators as a criterion for the effectiveness of the project.

Keywords: Lean clinic, primary health care, healthcare efficiency, public health.

INTRODUCTION

The stratification of technological risks and the analysis of potential causes of violations of medical technologies is the first step in achieving the safety of the health care system (Leape and Abookire 2005; Pronovost et al.2008; Ashley et al. 2010; Forster 2011; Potts et al. 2014; Taleghani et al. 2018). Until recently, the strategy of risk management in health-care sector was based on local solutions of specific problems (Shah et al. 2012). However, in the future this idea was transformed into a process approach which is based on the elimination of technological errors and optimization of systems and work processes in order to improve the quality of medical care (Kessels-Habraken et al. 2009; Card et al. 2012; Denny 2014; Avdeeva MV et al. 2015; Asgari et al. 2017).

The project «Thrifty polyclinic» has become a new step in the development of primary health care in Russia (Pisarev 2018). Initially, the pilot project «Thrifty polyclinic» was launched in October 2016 in 3 regions of the Russian Federation (Kaliningrad, Sevastopol, Yaroslavl). In 2017 project was already implemented in 301 polyclinics of 40 constituent entities of the Russian Federation, and it has acquired the status of a priority project «Creating a new model of primary health care» in all 85 constituent entities of the Russian Federation by 2018. It is expected to involve up to 2000 medical organizations in the project by 2023 (Kondratieva et al. 2018; Arzhentsov 2017). The passport of project «Creating a new model of primary health care» was prepared and approved in Russia (Passport of the priority project «Creating a new model of primary health care» 2017). The project of the Ministry of Health of the Russian Federation «Thrifty polyclinic» is aimed to improve the availability and quality of medical care to the population by optimizing the processes and eliminating losses in polyclinics (Andreev et al. 2018; Arzhentsov et al. 2017).

According to experts, patient spends up to 80% of the time in the clinic to receive support services (queue at the reception, an appointment, search for an outpatient

chard, etc.) and just 20% directly accesses medical care (doctor's consultation, medical tests). The situation is similar for the medical worker: 20% of time they spend on examination of the patient and 80% on registration of medical documentation (Kvitchuk and Grishchenko 2018). When working with application of methods of lean production there is a constant reduction of all types of losses for the purpose of achievement of ideal conditions of processes flow (Sochkova et al. 2018). However the ultimate goal should be the improvement of demographic indicators.

PURPOSE OF THE STUDY

To develop and approbate the methodology of the process approach to the analysis of polyclinics involved in the project «Creating a new model of medical organization providing primary health care».

MATERIALS AND METHODS OF THE STUDY

The research was conducted in the city polyclinic participating in the project «Creating a new model of medical organization providing primary health care». A working group of 10 people, which was created was created to implement the project, developed a methodology for the experiment. *The final nearest points of the efficiency of project implementation* are the increase of public satisfaction with the quality and availability of primary health care (the expected terms of obtaining the expected medical and social effect are 6 months). According to the requirements stated in the Territorial Program of state guarantees of free medical care, the criterion of the effectiveness of primary health care is the level of public satisfaction of at least 68% (The law of St. Petersburg 2017). The strategic goal of the project was to reach the endpoints of remote efficiency, which were demographic indicators – reduction of morbidity, disability, mortality (estimated time to obtain the expected medical and social effect was 3 years).

At the beginning of project realization, there were identified 4 interrelated processes, in which patient participates in receiving primary health care. In addition, there is another highlighted process which is known as «endpoint analysis» (figure 1). A preliminary external and internal audit of their condition was carried out. At this stage of the study, only the quality and availability of medical care were taken into account when visiting medical specialists. External audit instruments were the results of examination of 100 patients, 76,5% of whom were women and 23,5% men (mean age 48,7±19,2 years), and internal audit instruments – the results of temporary studies.

The questionnaire included 43 questions concerning the availability and quality of primary health care, conditions of stay in a medical institution, sanitary and hygienic condition of premises, satisfaction with work of various services and departments.

Time-based observations were carried out at the beginning, middle and end of the working week. During a few full working days there was a full cycle of customer service from the moment of appearance at the reception until the exit from the doctor's office. The timing results were recorded in a specially elaborated card. There was taken into account: 1) the time spent on a visit to the registry (if necessary, as part of the patient passed the registry and immediately sent to the doctor); 2) the waiting time for doctor’s appointment; 3) the duration of doctor’s appointment of one outpatient patient and its temporary structure (registration of medical records, examination of the patient, communication with the patient, etc.). The total amount of time-lapse observations was 186 person-visits. Statistical data are presented as average mean ± error of mean (M±m) or percentage (%).

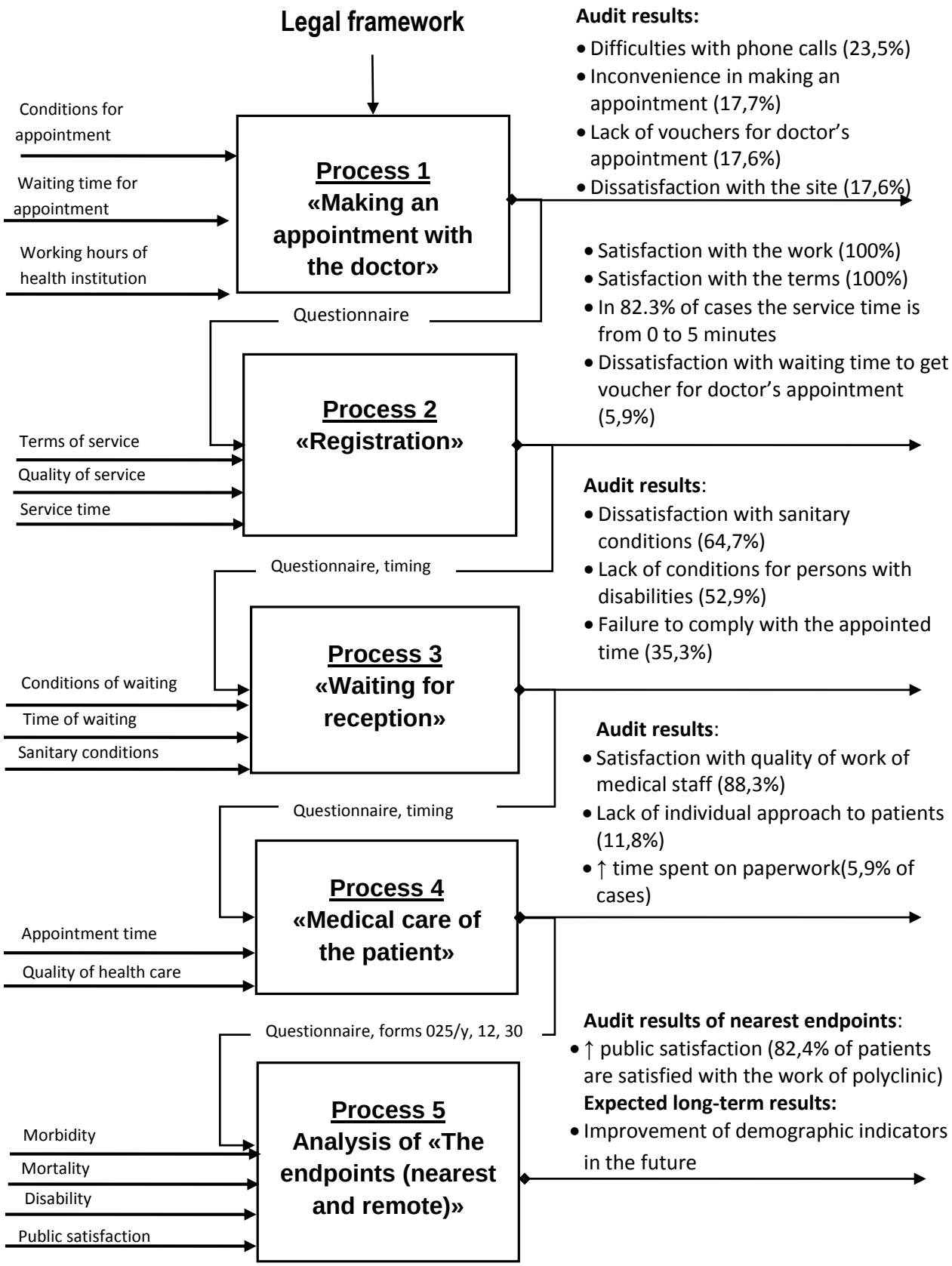


Figure 1. Processes allocated for controlling management in the implementation of pilot project «Thrifty polyclinic»

RESULTS AND DISCUSSION

External audit of process 1 (Making an appointment with the doctor) showed that the majority of the respondent patients are satisfied with working hours of the polyclinic (82,3%), as well as with the convenience of appointment, assessing this position as «satisfactory» (47,1%) or «good» (35,3%). Some patients noted the inconvenience in making an appointment (17,7%) due to the lack of vouchers for a doctor's appointment (17,6%) and congestion of the telephone line (23,5%). At the first visit to the polyclinic, only 52,9% of patients were able to make an outpatient appointment immediately, and 47,1% – just after repeated attempts. At the beginning of the research, 47,1% of patients independently registered for outpatient admission through the electronic system (online portal of the polyclinic, Internet resources of management bodies, Territorial Compulsory medical insurance Fund, etc.); 29,4% preferred to make an appointment by phone of «call-center»; 23,5% – registered through the polyclinic registry. Among the patients who made an outpatient appointment via electronic form of appointment, 50,0% could not immediately make an appointment due to lack of free vouchers for doctors' appointment (100,0%) (figure 2).

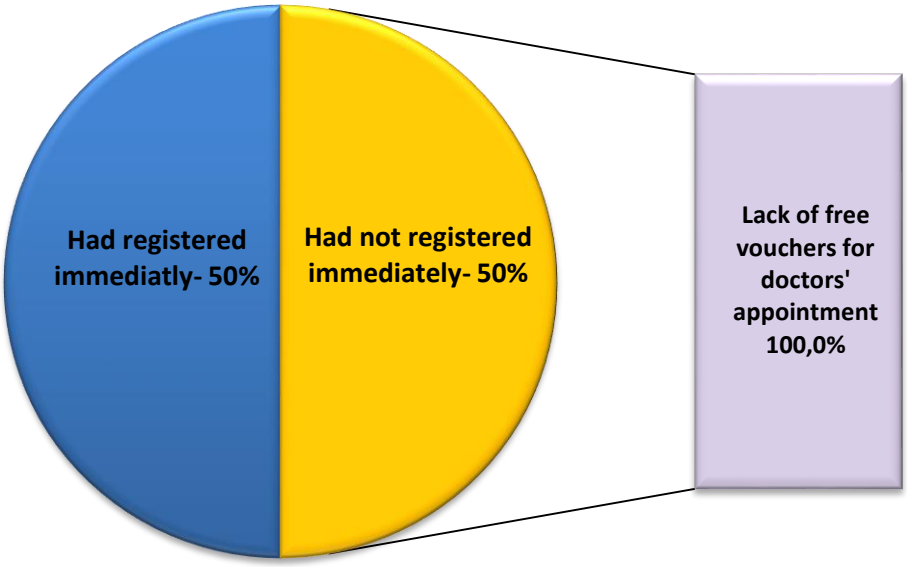


Figure 2. The nature of main problems the patient faces when making an electronic appointment for an outpatient appointment

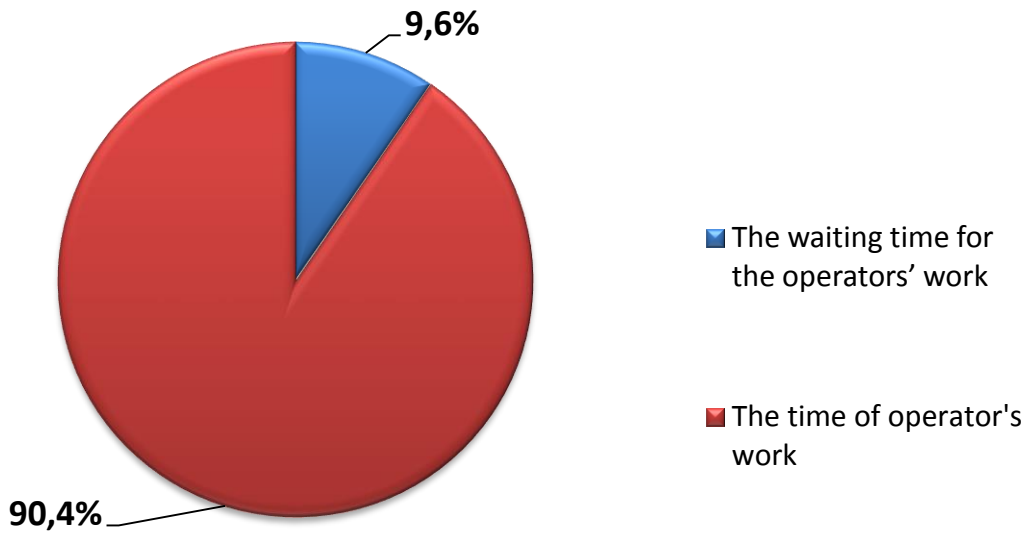
Initially, some patients were not satisfied with the informative content of the site (17,6%), in this regard it is necessary to carry out information and technical optimization of the Internet portal of the polyclinic for restructure in order to improve the perception of the proposed information. This is possible due to the allocation of basic and additional information modules, as well as the creation of technical opportunities for patient feedback (callback). The creation of a special information and educational unit which contains materials on the problems of public health (virtual health Schools, remote preventive counseling) is a prospective direction.

External audit of the status of the process 2 (Registration) did not reveal significant problems in the work of structural unit of clinics. Analysis of the survey results showed that 100% of patients are to varying degrees satisfied with the quality of registry staff work (5,8% – «satisfactory»; 82,4% – «good», 11,8% – «excellent»). All patients noted the convenience of the reception desk (100%) and the sufficiency of the waiting area (100%). However, some patients noted the lack of staff (5,9%) and the necessity to wait for the voucher for doctors' appointment (5,9%). However, the majority of respondents (88,2%) reported no problems with the registry.

According to the results of the internal audit, the average service time of 1 visitor at the reception was 1:56±0:05 minutes (Min 0:15 min; Max 5:08 min). The obtained data were confirmed by the results of the survey. In particular, significant part of patients in the queue had to wait no more than 5 minutes (82,3%). First of all, this is due to the introduction of electronic document management, which led to the reduction of human resources and the redistribution of functional responsibilities between registry operators. In the structure of the total time spent by the patient on visiting the registry, the main percentage was occupied by the useful work of the operator (90,4%) (figure 3). The average waiting time in the queue was 0: 00 minutes.

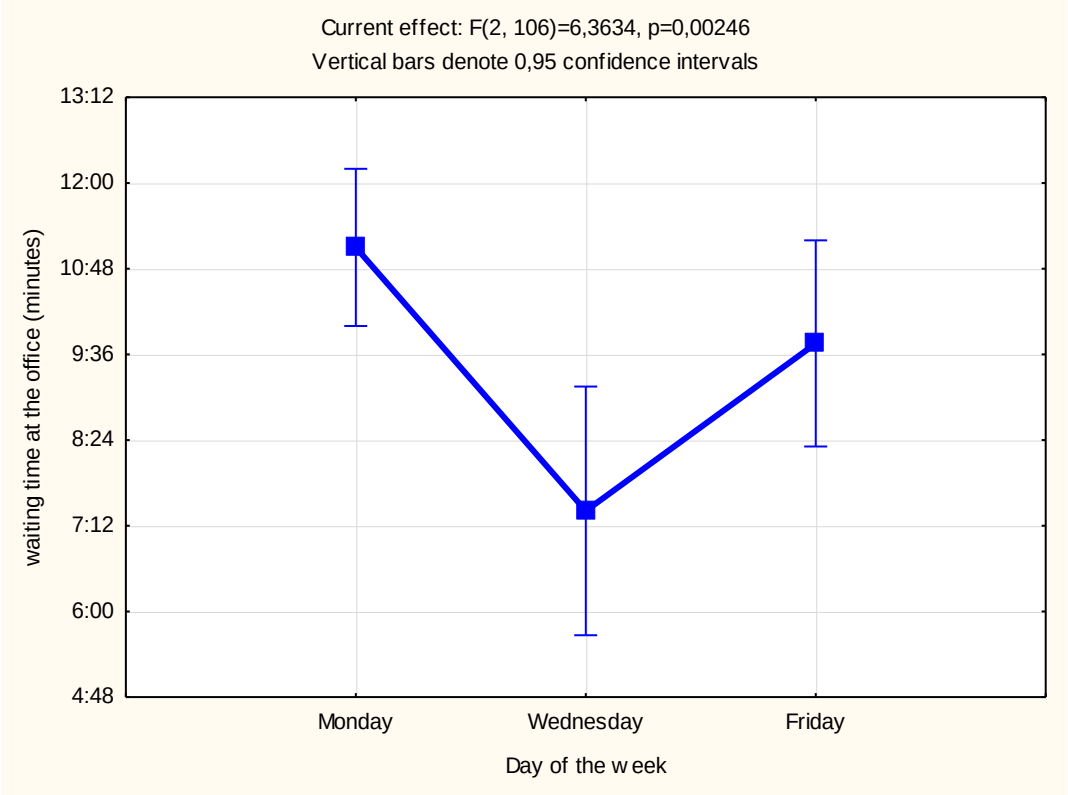
The waiting time for the operators' work was 0:15±0:03 minutes (Min 0:0 min; Max 2:21 min) (9,6%), while the average time of communication between the patient and the registrar was 1:41±0:05 minutes (Min 0:15 min; Max 5: 00 min) (90,4%). The structure of the time of communication of the patient with the registrar includes an appointment, selection of documents, information about the work of the polyclinic.

Figure 3. The structure of total time spent by the patient on visiting the registry



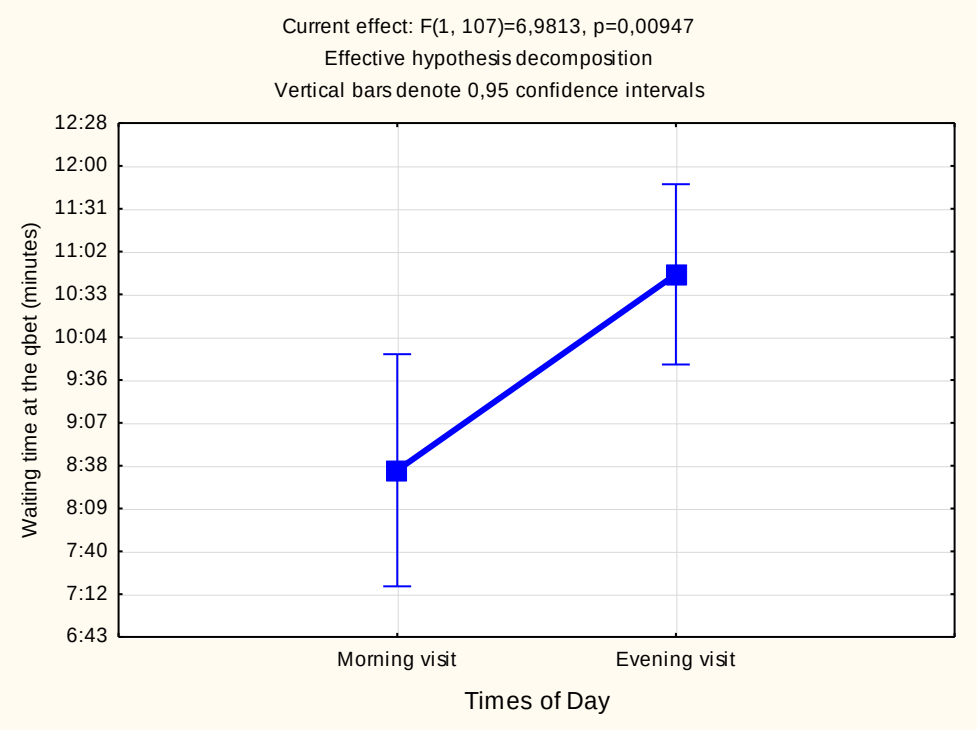
External audit of the state of process 3 (Waiting for reception) revealed a number of significant problems, including non-compliance with the appointed time of admission (35,3%), insufficient conditions for persons with disabilities (52,9%), dissatisfaction with sanitary and hygienic conditions (64,7%). Some patients are not satisfied with the sanitary and hygienic condition of toilet rooms (11,8%), lack of drinking water (23,5%) or both (29,4%). Internal audit of the state of process 3 showed that the average time spent on the waiting process for outpatient admission is 9: 57±0:24 minutes (Min 0:33 min.; Max 19: 46 min.). The waiting time in front of the doctor's office was influenced by the following factors: day of the week ($F(2,106)=6,3634$, $p=0,00246$) and time of day ($F(1,107)=6,9813$, $p=0,00947$). The results should be taken into account when planning the work of medical specialists. On days with a longer waiting time in the queue, it is advisable to redistribute the load on the medical staff, i.e. to involve more specialist doctors, for example, on Monday and Friday (figure 4).

Figure 4. Waiting time at the doctor's office depending on the day of work week



It is also necessary to form more flexible schedule of reception depending on the intensity of patient flows in the morning and evening hours (figure 5).

Figure 5. Waiting time at the doctor's office depending on time of day



The results of the external audit of the state of process 4 (Medical care of the patient) showed that a significant proportion of patients are satisfied with the quality of medical care. This concerns satisfaction with the quality of work of medical (88,3%) and paramedical personnel (100%). 11,8% of patients were concerned about the

lack of individual approach. 5,9% of respondents complained about the shortage of doctors of narrow specialties, and 5,9% of respondents complained about the lack of professionalism. The interviewed patients reported that 5,9% of cases were accompanied by a significant amount of time for registration of medical documentation.

The results of the internal audit confirmed that doctors spend a significant amount of time on outpatient admission of one patient. So the average time of medical care per patient was 22:28±2:13 minutes (Min 3:00 min.; Max 23:00 min.). It is possible that this was the main reason for the accumulation of patients in the queue in front of the doctor's office. This situation requires a more in-depth analysis for the correct solution. The structure of time spent on medical care of one patient was dominated by beneficial actions (96,9%). While non-useful actions (t of moving around the office – leaving the office, searching for documents in the office; t for other actions – phone calls, leaving the office, loading the operating system, communicating with the nurse, communicating with colleagues, coordination, etc.) took only 3,1% of the time. The duration of some useful actions was long. So in the structure of useful time the greatest cost was the duration of paper work (43,1%) (table 1).

Table1. Structure of time spent on medical care of one out-patient before optimization

%	*Components of outpatient admission*	Minutes M±σ	Min	Max
0,04%	Sanitization	0:01±0:00	0:01	0:01
14,7%	Survey	3:21±0:27	0:00	9:00
11,8%	Objective examination (palpation, percussion, auscultation)	2:29±0:35	0:00	14:00
2,1%	Measure of blood pressure	0:25±0:05	0:00	1:00
25,1%	Consultation (advice, recommendations, appointments, explanations, oral conversation)	5:17±0:52	0:00	16:00
43,1%	Registration of documentation (registration of the patient, prescriptions, registration of the medical record, record on analyses, registration of the sick leave, registration of the sanatorium card, registration of the referrals)	10:05±0:56	0:00	21:00
3,1%	Moving around the office (exit from the office, search for documents in the office)	0:20±0:11	0:00	5:00
	Time for other actions (phone calls, leaving the office, loading the operating system, communication with the nurse, communication with colleagues, coordination)	0:29±0:15	0:00	7:00

Consequently, the study showed that it is necessary to optimize the activities of doctors to reduce the time spent on medical care of one patient. This is possible due to reduction of expenses of time for registration of medical documentation and work of abstract nature. Subsequently, this measure will help to reduce the waiting time of patients in the queue in front of the office and increase the level of patient satisfaction with the conditions of medical care.

The analysis of the nearest and remote endpoints is carried out. In General, 82,4% of patients were satisfied with the work of the polyclinic, assessing it as «good» (76,5%) or «excellent» (5,9%). According to this criterion, the work of the clinic can be regarded as effective. In the future, it is planned to monitor morbidity, disability and mortality as the main criteria for the effectiveness of the project.

The satisfaction of patients with the effectiveness of the outpatient institution as a whole is analyzed (table. 2). It was found that the work of nurses evaluated by patients most highly (4,2±0,6 points), and the lowest rates were obtained with respect to the time of compliance with outpatient admission (2,9±0,9 points).

Table 2. Ranking of parameters of polyclinic activity according to the degree of effectiveness (five-point scale)

Rank	*Evaluating parameter*	M±σ (баллы)	Min	Max

1.	The service by middle-level medical personnel	4,2±0,6	3,0	5,0
2.	The informativity of stands	4,2±0,7	3,0	5,0
3.	The work of registry	4,1±0,4	3,0	5,0
4.	The working time of polyclinic	4,0±1,0	1,0	5,0
5.	The service by doctors (courtesy, professionalism)	4,0±1,0	2,0	5,0
6.	The comfortability of staying in clinic	3,9±0,8	2,0	5,0
7.	The work of clinic as a whole	3,8±0,6	2,0	5,0
8.	The presence of narrow specialists	3,6±1,2	1,0	5,0
9.	The availability of laboratory and diagnostic tests	3,3±1,3	1,0	5,0
10.	The convenience of making an appointment	3,1±1,0	1,0	4,0
11.	Observance of the appointed time	2,9±0,9	1,0	4,0

The analysis of the factors influencing the results of the integrated assessment of the activity of the outpatient clinic showed that patients are more focused on comfort (b=2,57; p<0,001) and conditions of stay in the outpatient clinic (b=2,25; p<0,001). While the quality of care by medical personnel is the last rank among the factors affecting the results of the integrated assessment of the outpatient clinic (b=0,05; p<0,01) (table 3).

Table 3. Factors influencing the results of integrated assessment of the outpatient institution

Factors influencing the satisfaction of patients	*Regression coefficient b*	*p*
The comfortability of staying in polyclinic	2,57	0,00
The organization of work of polyclinic as a whole	2,44	0,00
The satisfaction with the conditions of stay	2,25	0,00
The possibility to make an appointment at the first application	1,76	0,00
The informativity of stands	1,07	0,00
The satisfaction with information on the site	1,00	0,00
The organization or the registry	0,93	0,00
The observance of the appointed time	0,76	0,00
The preliminary acquaintance with the polyclinic website	0,56	0,00
The convenience of making an appointment	0,38	0,00
A sufficient number of narrow specialists	0,36	0,00
Sex	0,30	0,00
The quality of care by medical personnel	0,05	0,00
Age	0,01	0,00

Therefore, when conducting a survey of the population about the quality and conditions of medical care, the results of the study may be affected by the subjective factor (gender, age, bias of the patient, etc.). In this regard, in addition to the external audit, an internal audit of the integrated assessment of the outpatient clinic is required.

CONCLUSION

1. There is a need for information and technical improvement of the Internet portal of the clinic (structuring of the proposed information, improving its perception, the highlighting of basic and additional information modules, the presence of feedback with the ability to order a call back, webinars on health problems, the organization of virtual health schools, the organization of remote preventive counseling).
2. The results of medical and sociological research showed that there is a need to improve sanitary and hygienic conditions in public places in an outpatient clinic.

3. The results of the external and internal audit showed that there is a need to optimize the activities of outpatient physicians to reduce waiting times in the queue (optimization of the workplace, analysis of the load on the medical staff, reducing the time spent on registration of medical records, personalized approach to patients).
4. One of the lines of optimization is the development of administrative engineering, which concludes the transfer of part of the authority to realize paper work in the management of nurses and/or the operator. This will significantly reduce the time of outpatient admission of one patient and avoid wasting useful time to communicate with the patient.

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