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Development of Coloproctology In Uzbekistan: New Approaches to The Organization of Outpatient and Inpatient Care

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Abstract

Background: Colorectal cancer (CRC) and inflammatory bowel diseases (IBD) are among the most significant problems of modern healthcare and require a systemic organizational response.

Objective: To provide a scientific basis for and develop effective organizational models of outpatient and inpatient coloproctological care in Uzbekistan, taking into account current clinical, epidemiological, socio-demographic, and regulatory factors, as well as the adaptation of international best practices to the national healthcare system.

Methods: Proposals were developed for establishing a center incorporating telemedicine, digital document management, and day-hospital programs. Elements of the model were piloted in regions of Uzbekistan, generating data on accessibility, manageability, and effectiveness of care. Standardized approaches were developed together with a system of medical-social, economic, and managerial indicators for monitoring.

Results: Data from 2020-2025 demonstrate a qualitative shift in the culture of physician-patient interaction. Digital reminders, telemonitoring, and systematic work by healthcare professionals have contributed to sustained treatment adherence, with a transition from passive compliance with prescriptions to conscious patient participation in their own recovery.

Conclusion: 1. A systemic analysis of coloproctological care in Uzbekistan demonstrated its fragmented nature: outpatient and inpatient services operate without sufficient coordination, specialized offices and beds are unavailable in many regions, and patient referral pathways are insufficiently regulated.

Keywords: Colorectal cancer; chronic inflammatory bowel diseases; digital platform; telemedicine.

Introduction

Colorectal cancer (CRC) and inflammatory bowel diseases (IBD) are among the most significant problems of modern healthcare and require a systemic organizational response.

According to WHO (GLOBOCAN, 2024), approximately 1.9 million cases of CRC were registered worldwide, of which approximately 930,000 patients died. CRC ranks third among oncological diseases and second among all causes of cancer-related mortality.

Projection for 2040: a 63% increase in incidence and a 73% increase in mortality.

Ulcerative colitis and Crohn's disease are reported in the European Union and North America at rates of 300–500 cases per 100,000 population.

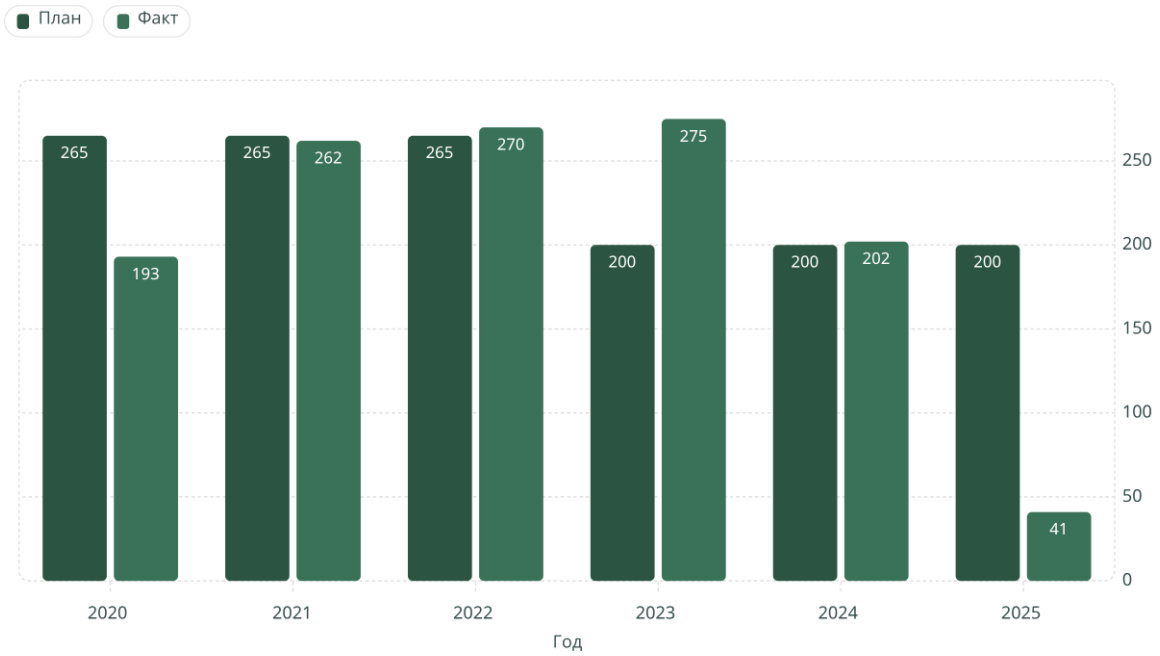
The increasing incidence of IBD in countries with developing healthcare systems highlights the importance of implementing effective measures in Uzbekistan.

These diseases not only impair patients' quality of life but also contribute to an increase in the number of coloproctological surgical interventions among the working-age population.

Analysis of data from the coloproctological service of a major medical institution in Tashkent demonstrates a steady increase in disease burden and pressure on inpatient infrastructure.

Year-by-year dynamics: 2020 — actual 193 (73%); 2021 — actual 262 (99%); 2023 — actual 275 (137%). The growth of fee-based surgical care highlights the increasing financial burden on patients and the need to improve access to free specialized care.

Only six beds were allocated to the entire coloproctological unit of a major institution in Tashkent, which does not ensure optimal patient coverage. Insufficient staffing results in prolonged waiting times for consultation and hospitalization.



To address this gap, the present article aims to provide a scientific basis for and develop organizational models of outpatient and inpatient coloproctological care in the Republic of Uzbekistan, taking international approaches into account.

The specific objectives of the study are:

• To analyze the current state of the coloproctological care system in the Republic of Uzbekistan and identify the major organizational, human-resource, and resource-related problems at the outpatient and inpatient levels.

• To substantiate a model of a specialized coloproctology center incorporating modern diagnostic, treatment, and rehabilitation methods, as well as digital technologies for healthcare delivery.

• To develop standardized approaches with a system of medical-social, economic, and managerial indicators for monitoring.

Methods

The regional distribution of patients with inflammatory bowel diseases in the Republic of Uzbekistan served as the basis for selecting pilot sites. The highest concentration of patients was recorded in Tashkent and major industrial regions, where the need for specialized care is greatest.

The analysis covered clinical and statistical data for 2020–2025 and took into account regional differences in disease incidence, physician workload, and infrastructure status. This made it possible to maximize the effect at the initial stage of implementation and establish an evidence base for scaling the model.

From 2015 to 2017, a sharp increase in incidence was observed, associated with improved diagnosis and increased healthcare-seeking among the population. Following stabilization, the upward trend persisted, with a particularly pronounced increase after 2020, indicating a genuine rise in the prevalence of chronic forms of disease and insufficient preventive measures. Without systemic

modernization, the burden on inpatient facilities will continue to increase; an integrated model is therefore a strategic necessity rather than an experiment.

Analysis of clinical and statistical data from the pilot regions (2020–2025).

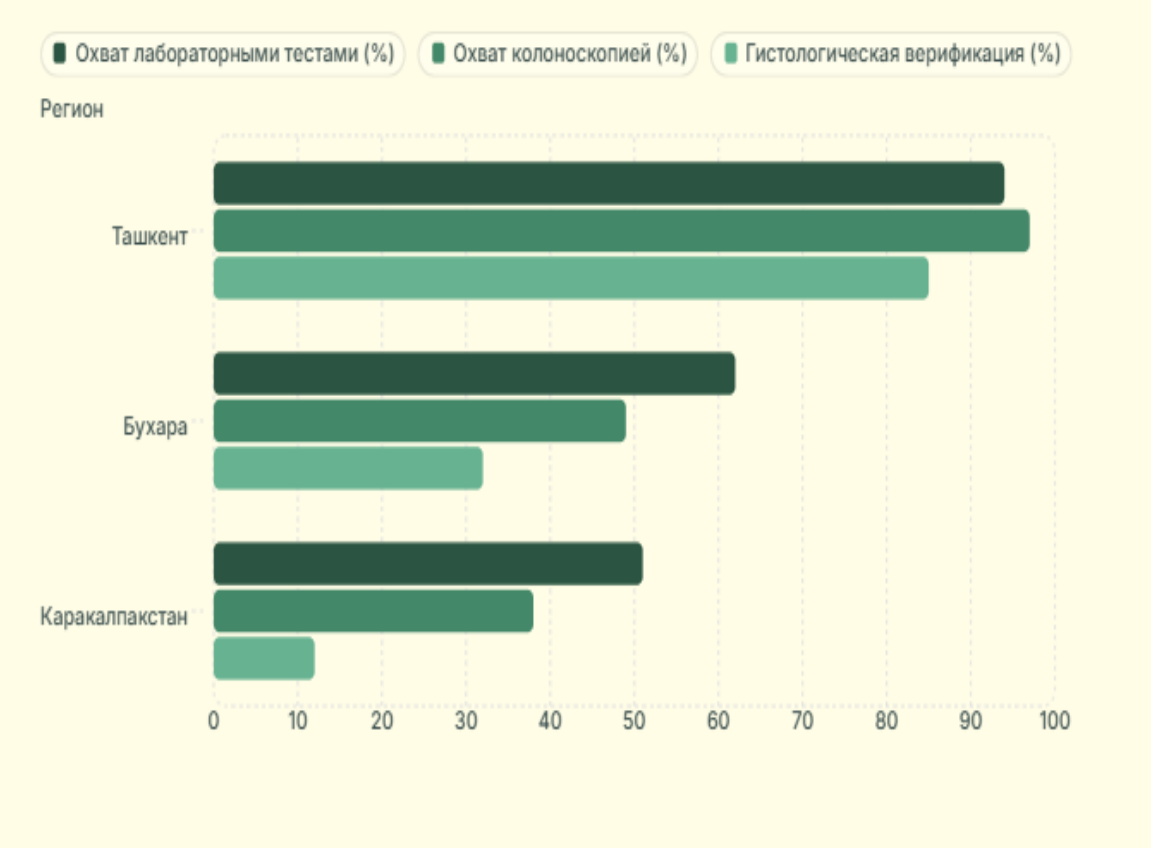
A comparative analysis of diagnostic coverage for ulcerative colitis in Tashkent, Bukhara, and Karakalpakstan demonstrated statistically significant improvement across all indicators ($p < 0.001$).

Показатель	2020 год (%)	2025 год (%)	Δ (%)	p-значение
Охват эндоскопическим обследованием	58	86	**+28**	<0,001
Гистологическое подтверждение по биопсии	38	70	**+32**	<0,001
Проведение теста на кальпротектин	12	58	**+46**	<0,001

Digital tools, structured referral pathways, and staff training resulted in a substantial improvement in diagnostic quality. Patients receive examinations more rapidly, accurately, and closer to their place of residence, which substantially improves access to specialized care and reduces the number of unjustified hospitalizations.

Comparative dynamics of indicators in the pilot regions (2020–2025)

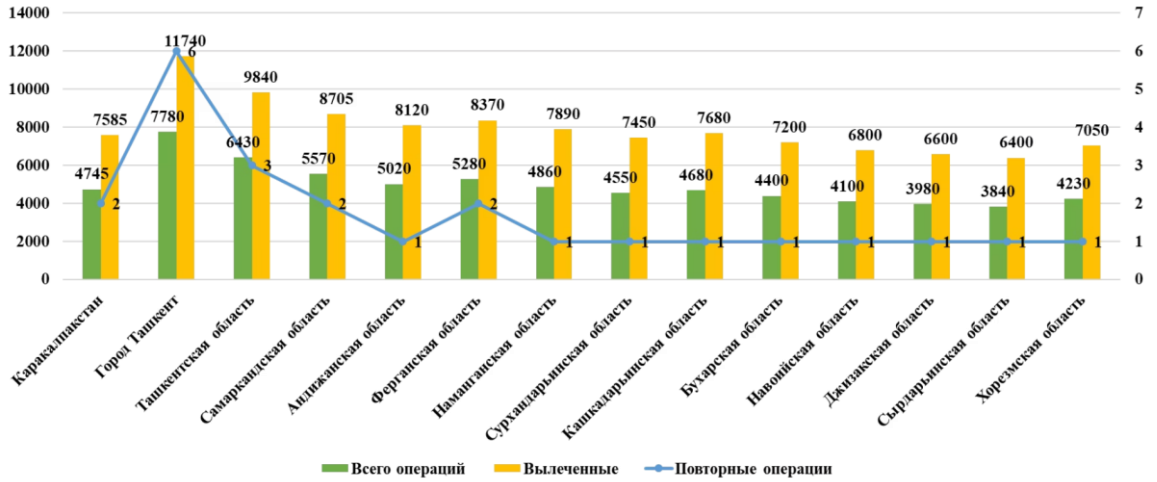
All three pilot regions demonstrated sustained growth across all key indicators. The increase was not associated with a rise in disease incidence; rather, it reflected improved referral pathways and the fact that patients began receiving timely care closer to their place of residence.



Показатель	2020 г.	2025 г.	Изменение (%)
Ташкент – приёмы	18 500	27 400	+48,1%
Ташкент – госпитализации	2 050	3 600	+75,6%
Ташкент – операции	1 200	2 100	+75,0%
Бухара – приёмы	6 800	11 200	+64,7%
Бухара – госпитализации	780	1 500	+92,3%
Бухара – операции	410	920	+124,4%
Нукус – приёмы	4 300	7 600	+76,7%
Нукус – госпитализации	520	1 080	+107,7%
Нукус – операции	270	640	+137,0%

Surgical activity by region

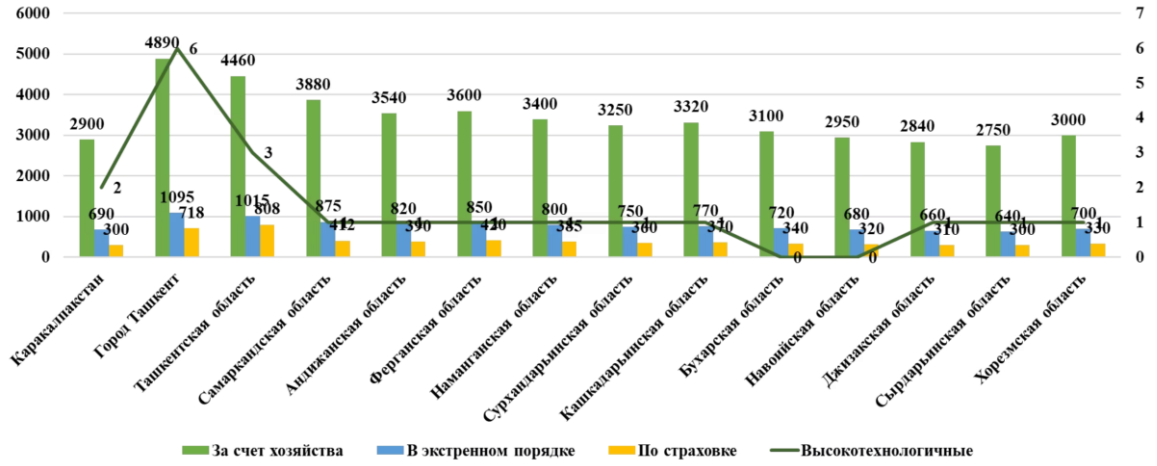
The highest surgical activity was concentrated in Tashkent and Tashkent Region, where the main specialized centers and qualified personnel are located. Absolute indicators were lower in the regions; however, the rate of repeat operations was minimal, providing direct evidence of high-quality primary interventions and appropriate preoperative preparation.



Financial and organizational indicators of surgery by region

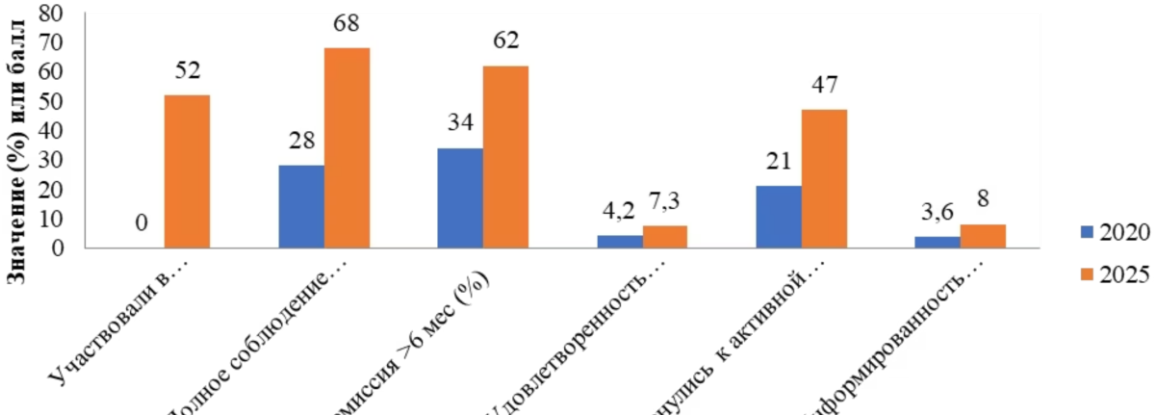
The majority of surgical interventions continue to be financed from the medical institutions' own funds. At the same time, an increase was recorded in operations performed under insurance coverage and on an emergency basis, particularly in Tashkent and Tashkent Region, where cooperation with the private sector and insurance companies is most developed.

The analysis made it possible to account for regional differences in disease incidence, physician workload, and infrastructure so that implementation could begin where the effect would be most pronounced and representative for the system as a whole.



Effectiveness of patient education and registry-based follow-up

Within the integrated model, a "Patient School" program and an electronic registry-based follow-up system were implemented. In 2020, no educational sessions were conducted (0%), whereas by 2025 coverage had reached 52%. Key indicators of patient engagement and clinical effectiveness (2020 → 2025).



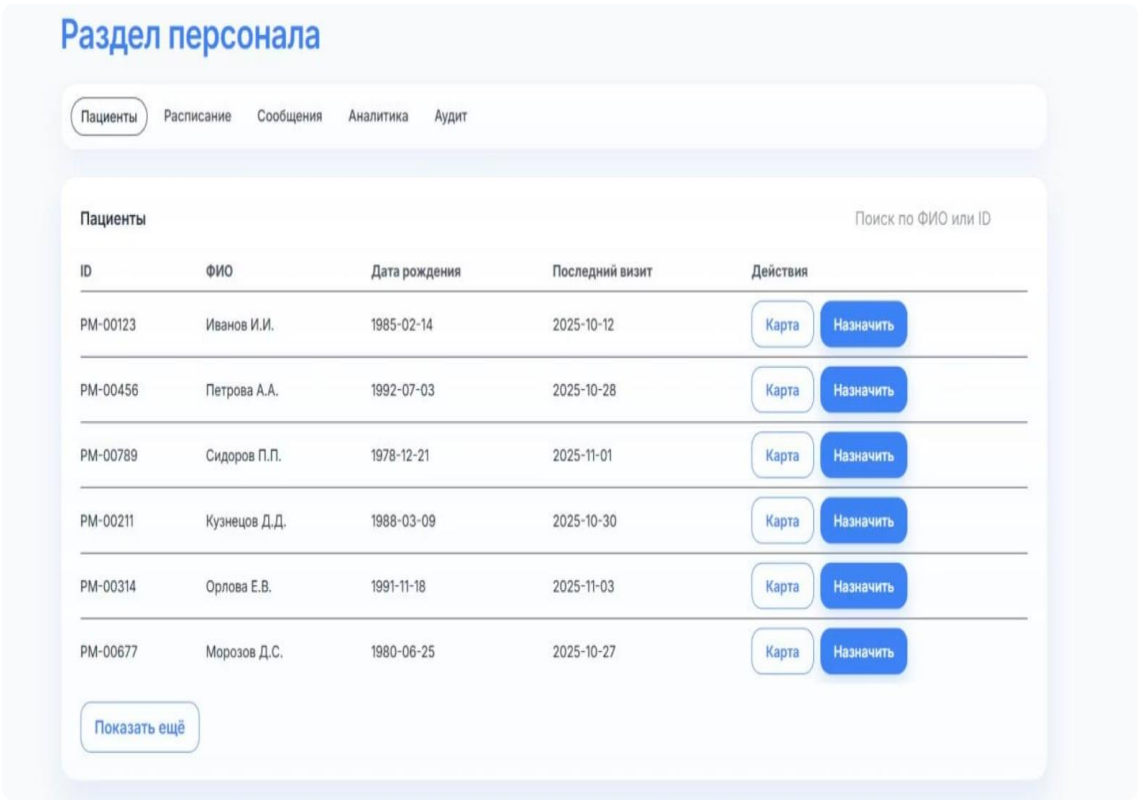
Treatment adherence increased by 40%, resulting in a reduction in the number of relapses and complications. The duration of remission and return to active life also demonstrated a statistically significant increase.

The integrated model included the implementation of the "Patient School" program and an electronic registry-based follow-up system, which produced a number of positive outcomes.

Digital Platform Presentmed

The digital tool implemented within the program is described below.

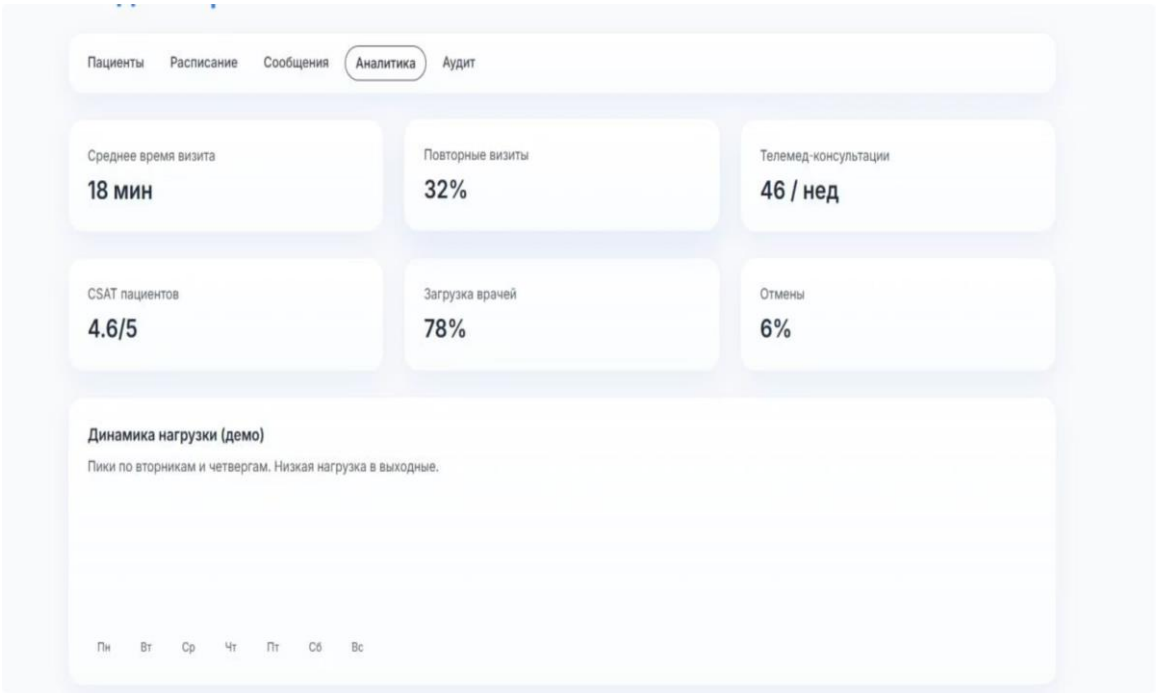
"Patients" module interface in the staff section of the PresentMed system



The PresentMed platform is based on a modular approach to the comprehensive digitalization of medical activities. Each component functions as an independent module.

The "Patients" module is the core of the system: it integrates the electronic medical record, history of visits, laboratory and instrumental data, documents, and images in a secure format. The patient record displays visit statuses, the dynamics of encounters, and the results of telemedicine sessions. The tool operates within a unified digital clinical environment.

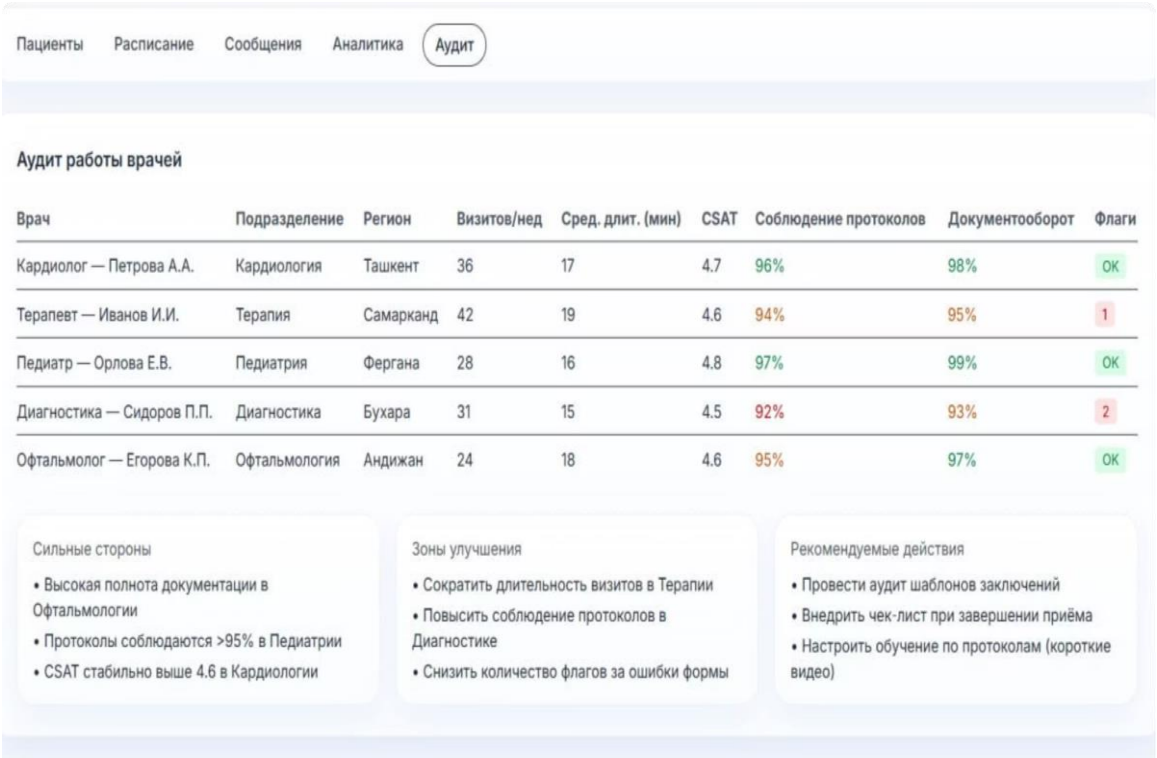
"Analytics" section: key performance indicators (KPIs) in the PresentMed system



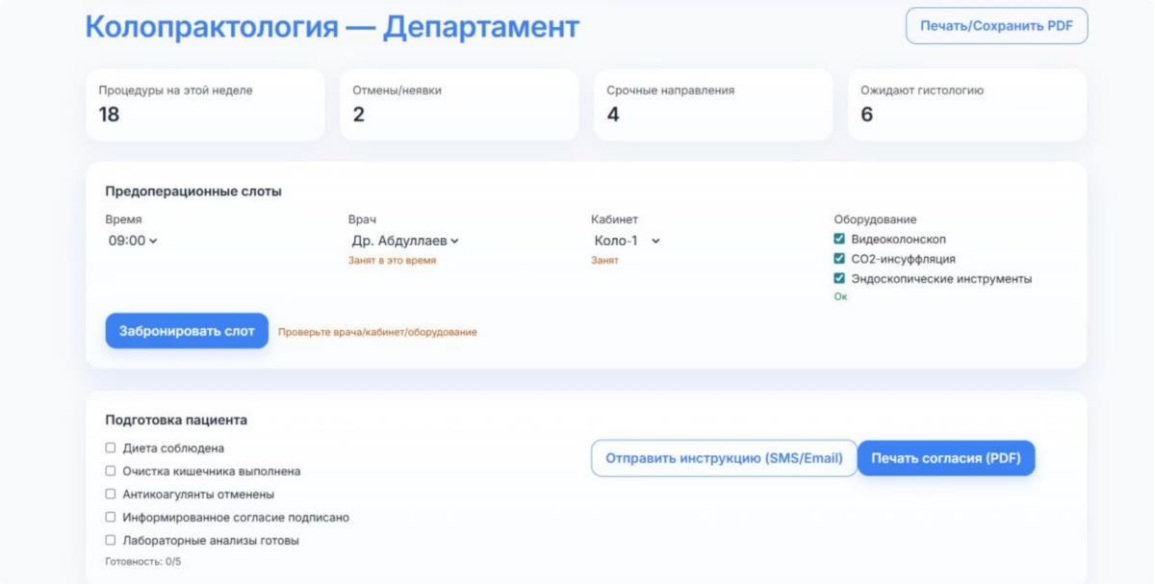
The PresentMed analytics section provides healthcare facility management with real-time operational information on service performance. The dashboard generates key performance indicators, including physician workload, average waiting time, coverage of follow-up care, and trends in major clinical indicators. Data are updated automatically and are available both at the level of an individual institution and for interregional comparison.

“Physician Performance Audit” module interface in the PresentMed system

The “Audit” module performs internal quality-control functions for medical activities. It records patient satisfaction indicators (CSAT), analyzes physicians’ adherence to clinical protocols, and identifies non-conformity flags. The system generates departmental ratings based on completeness of medical documentation, duration of consultations, and the number of corrections made to records. An integrated log provides transparency of staff actions and enables subsequent analysis.



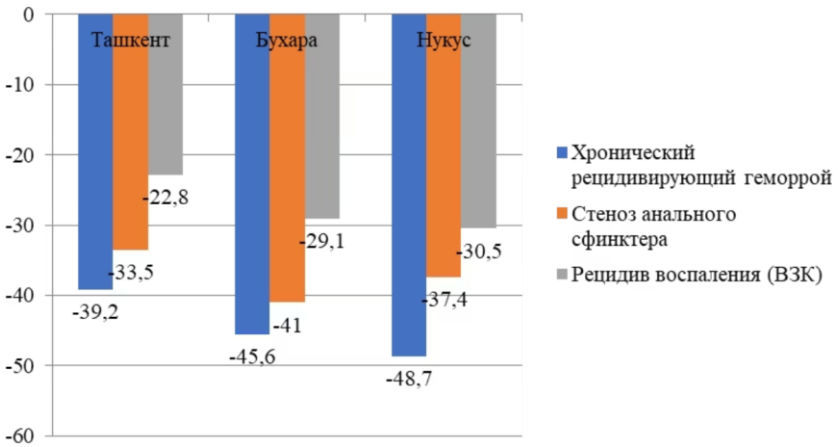
Specialized “Coloproctology” module in the PresentMed system

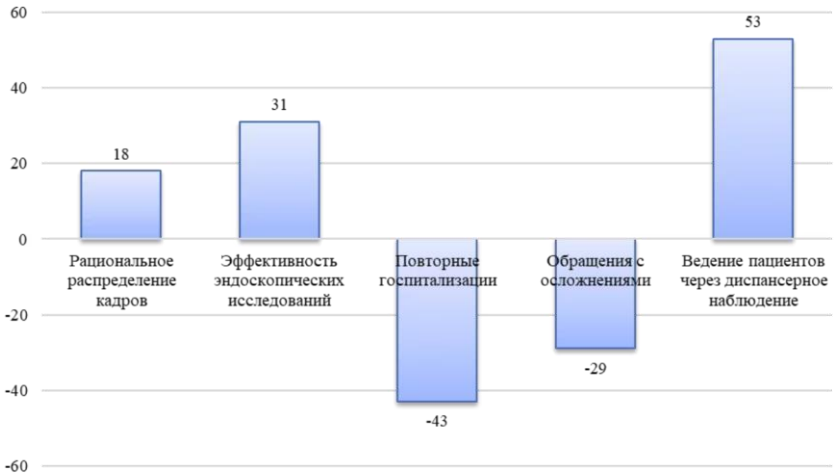


The specialized “Coloproctology” module is adapted to the nosological characteristics of the service and includes structured examination templates, IBD management protocols, surgical planning tools, and postoperative monitoring. The module is integrated with the patient registry and enables the creation of a “proctological passport” — a digital profile of each patient containing a complete history of disease, treatment, and longitudinal follow-up.

Results

Reduction in recurrence and changes in effectiveness indicators following implementation of the model (2020–2025)





The integrated model of coloproctological care ensured continuity between outpatient and inpatient services, management of patients according to unified clinical protocols, and sustained improvement in the professional level of specialists.

Assessment of patient adherence to treatment recommendations using the Morisky–Green scale

Data from 2020–2025 demonstrate a qualitative shift in the culture of physician–patient interaction. Digital reminders, telemonitoring, and systematic work by healthcare professionals have contributed to sustained treatment adherence, representing a transition from passive compliance with prescriptions to conscious patient participation in their own recovery.

Вопрос	2020 «Да» (%)	2025 «Да» (%)	Δ (%)
Забываете ли вы принимать лекарства?	61	29	**−32**
Прекращаете ли лечение по собственной инициативе?	44	17	**−27**
Прекращаете ли терапию, когда чувствуете себя лучше?	51	19	**−32**
Меняли ли вы препарат самостоятельно при недоверии к его эффективности?	38	14	**−24**

The 2025 figure reflects not merely a reduction in forgetfulness, but a transition toward conscious patient participation in their own recovery — a fundamental change in clinical culture.

Conclusion

1. A systemic analysis of coloproctological care in Uzbekistan demonstrated its fragmented nature: outpatient and inpatient services operate without sufficient coordination, specialized offices and beds are unavailable in many regions, and patient referral pathways are insufficiently regulated.

2. International experience (Germany, France, the United Kingdom, South Korea, Japan, and the United States) demonstrated the effectiveness of integrated models incorporating screening, specialized centers, telemedicine, robotic technologies, and standardized referral pathways. These practices served as the basis for developing an adapted national model.

3. An integrated model of outpatient and inpatient care was developed based on the principles of continuity, accessibility, and technological capacity. Its structure includes specialized centers, day hospitals, electronic registries, telemedicine consultations, and patient education.

4. Clinical effectiveness of the model was confirmed by pilot implementation: diagnostic accuracy increased from 60% to 90%; implementation of pathogenetic therapy reduced the need for surgical interventions from 24.8% to 13.6%; remission duration doubled; and patient adherence increased 2.4-fold.

5. Socioeconomic effect: disability decreased from 18% to 9.4%; the number of days of incapacity for work decreased from 56 to 31 per patient per year; direct budget savings amounted to approximately UZS 6.5 billion for 1,000 patients.

6. The model reduced regional disparities. In the pilot regions, the quality of diagnosis and treatment approached the level observed in Tashkent, reducing the gap in the availability of medical services by 2.7-fold.

7. Histomorphological studies confirmed the tissue-level effect of therapy: reduced infiltration, preservation of crypt architecture, and early formation of granulation tissue. The correlation between morphological and clinical outcomes was 92.4%.

8. Practical significance of the study. Methodological documents were prepared for physicians and administrators; an update of national clinical protocols was proposed, including morphological verification, pathogenetic therapy, and electronic monitoring; recommendations were developed for training and retraining personnel in histopathology, molecular therapy, patient communication, endoscopy, and rehabilitation.

9. The integrated model is recommended for scaling up across all regions of the country as a universal mechanism for organizational transformation of specialized care. It may serve as a basis for the development of other specialized areas of medicine in Uzbekistan.

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