AMERICAN ACADEMIC PUBLISHER

INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

ISSN NUMBER: 2692 - 5206 Volume 6. No 05. MAY ,2026

MODERNIZATION OF SPECIALIZED PEDIATRIC CARE IN UZBEKISTAN: INSTITUTIONAL TRANSFORMATION OF THE NATIONAL CHILDREN'S MEDICAL CENTER BASED ON JCI STANDARDS AND INNOVATIVE TECHNOLOGIES

Agzamova N.A.[1'2], **Matnazarova G.S.**[1], **Umarov B.Ya.**[2], **Sabirov J.R.**[3]
[1] Tashkent State Medical University, Uzbekistan
[2] National Children's Medical Center, Uzbekistan
[3] National Medical Center, Uzbekistan
https://doi.org/10.5281/zenodo.20035679

Abstract

Objective: To evaluate the content and effectiveness of institutional transformation at the National Children's Medical Center during 2021–2025 through integration of Joint Commission International (JCI) standards, high-technology medical care, patient safety infrastructure, and scientific-educational capacity. Materials and Methods: A retrospective descriptive-analytical study was conducted using institutional annual reports for 2021–2025, JCI accreditation documentation, RIQAS external laboratory quality assessment data, and research performance metrics. Results: In 2025, the Center delivered 94,383 outpatient consultations and performed 6,404 surgical procedures, with more than 70% classified as high-technology interventions. Programs in bone marrow transplantation, kidney and liver transplantation, and congenital cardiac surgery demonstrated substantial expansion. JCI accreditation obtained in 2024 facilitated systematic implementation of the International Patient Safety Goals and strengthened clinical governance frameworks. Scientific productivity increased, with 18 publications indexed in Scopus and Web of Science databases during the first 11 months of 2025. Conclusion: The Center demonstrates a scalable institutional model for modernization of tertiary pediatric services in Uzbekistan.

Keywords: JCI accreditation, patient safety, clinical governance, high-technology surgery, transplantation, RIQAS, pediatrics, quality control, institutional transformation.

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 6. No 05. MAY ,2026

Introduction

In contemporary healthcare systems, institutional performance is evaluated not only by clinical activity volume but also through patient safety metrics, standardization of clinical decision-making, availability of high-technology medical services, and scientific-pedagogical capacity [1,4]. These criteria assume particular importance in pediatric medicine, where physiological characteristics of the pediatric population, requirements for multidisciplinary care, and the necessity for long-term clinical outcomes place exceptionally high demands on medical management [1,4].

In Uzbekistan, recent years have witnessed accelerated reforms aimed at reorganizing specialized medical care according to international benchmarks, quality management frameworks, and institutionalization of safety protocols. Within this context, the experience of the National Children's Medical Center (NCMC) serves as a practical model for pediatric service modernization and represents significant scientific interest [1,5].

Through integration of clinical services, transplantology, cardiac surgery, education, and research activities within a unified management system, the Center has established a novel institutional format for Level IV specialized care. Notably, achievement of Joint Commission International (JCI) accreditation represented a decisive milestone in fostering both a "culture of quality" and a "culture of patient safety" within the institution [1,4].

However, the volume of published research dedicated to comprehensive analysis of this transformation's content and effectiveness remains limited. This necessitates scientific synthesis of the primary mechanisms underlying institutional transformation through the NCMC case study.

Research Objective

The objective of this study is to evaluate the nature and effectiveness of institutional, clinical, and scientific transformation implemented at the National Children's Medical Center between 2021 and 2025, specifically through integration of JCI standards, high-technology medical services, and international collaboration [1,4]. The scientific novelty of this work lies in the integrated assessment of the Center's clinical activity, accreditation processes, patient safety infrastructure, and scientific productivity within a single unified analytical framework.

Materials and Methods

This study employed a retrospective descriptive-analytical design. Primary data sources included NCMC performance reports for 2021–2025, JCI accreditation preparation and external assessment documentation, patient safety and quality control department data, external laboratory quality assessment results, and the Center's scientific-pedagogical performance metrics [1,4].

Analysis utilized a systems approach, comparative analysis, content analysis, statistical description, and bibliometric assessment. Evaluation benchmarks were based on the 1,200+ requirements specified in the 8th edition of JCI standards, the International Patient Safety Goals (IPSG), and RIQAS external quality control criteria for laboratory diagnostics [1,4].

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 6. No 05. MAY ,2026

A limitation of this study is its reliance on single-institution experience and aggregated institutional data; consequently, patient-level clinical outcomes and economic efficiency warrant more comprehensive evaluation in separate prospective studies.

Results

The findings demonstrate that institutional transformation of the National Children's Medical Center progressed across four interconnected strategic domains: expansion of clinical capacity, increasing proportion of high-technology medical services, institutionalization of quality and safety infrastructure, and strengthening of the scientific-educational environment.

1. Expansion of Clinical Capacity and High-Technology Medical Assistance

By the end of 2025, the National Children's Medical Center demonstrated significant scaling of clinical services, with outpatient consultations reaching 94,383, representing an 8% increase compared to 2024 [1]. The total number of surgical procedures reached 6,404, of which more than 4,500 (exceeding 70%) were classified as high-technology interventions [1]. These figures indicate that the Center's development is characterized not merely by volume growth but by an increasing "complexity index," reflecting a strategic shift toward highly specialized medical services.

Achievements in transplantology are particularly noteworthy. In 2025, successful completion of 15 autologous and 8 allogeneic bone marrow transplants—the latter in partnership with the German DKMS Foundation—confirmed establishment of a complete technological pathway for hematopoietic stem cell transplantation within the institution [1]. Furthermore, performance of 12 laparoscopic kidney transplants and 4 liver transplants underscores institutionalization of minimally invasive approaches in tertiary pediatric practice [1].

In cardiac surgery, completion of 632 operations for congenital heart defects further validates the Center's capacity to deliver sustained, high-risk, resource-intensive multidisciplinary care [1].

2. International Accreditation and Patient Safety Infrastructure

In March 2024, the NCMC became the first state-owned medical institution in Uzbekistan to achieve Joint Commission International (JCI) accreditation [1,4]. This milestone transcended formal certification, serving as a catalyst for comprehensive restructuring across all clinical governance stages. Specifically, unified protocols were institutionalized based on the six International Patient Safety Goals (IPSG), encompassing patient identification, effective communication, high-alert medication safety, surgical safety, infection prevention and control, and fall risk reduction [1,4].
Implementation of systematic mechanisms—including mandatory use of at least two patient identifiers, color-coded wristbands, "Read Back" and "SBAR" communication algorithms, and surgical "Time-out" and "Sign-out" protocols—served to substantially minimize medical error risk [1,2,4].

Critically, quality control at the Center transitioned from episodic inspections to a continuous management cycle based on incident reporting and Root Cause Analysis (RCA). This transformation provided the institutional foundation for a "Just Culture," prioritizing systems learning over individual blame. As a direct result of these safety frameworks, the inpatient

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 6. No 05. MAY ,2026

mortality rate for 2025 was maintained at 0.8% (95 cases), meeting international benchmarks for pediatric tertiary care [2,6].

3. Institutional Value of Scientific and Educational Capacity

Advancement of scientific and educational capacity has become an integral component of the Center's clinical modernization. With 32 dedicated scientific staff members, the institution's research capacity reached 17% in 2025 [1].

During the first 11 months of the year, 18 articles were published in Scopus and Web of Science indexed journals, including publications in Q1 and Q2 quartile journals. This achievement demonstrates the institution's academic productivity alongside its clinical excellence [1].

Expansion of doctoral programs to seven PhD tracks and training of 115 residents across 12 medical specialties signifies successful establishment of an integrated "Clinical Practice–Education–Research" model [1]. This framework ensures continuous development and sustainability of highly qualified human capital, which is essential for the long-term evolution of high-technology medical facilities.

Table 1. Key clinical and institutional indicators of NCMC for 2025

Indicator	2025 Data	Significance
Outpatient Services	94,383 patients	Steady growth of clinical capacity (+8%)
Surgical Operations	6,404 units	High volume of operative activity
High-Tech Procedures	4,500+ (More than 70%)	Priority of complex types of care
Bone Marrow Transplantation	15 auto, 8 allo	Established hematology and transplantology chain
Kidney and Liver Transplantation	12 kidney, 4 liver	Laparoscopic and multidisciplinary approach
Congenital Heart Defect Operations	632 units	High capacity of cardiac surgery service
Scientific Activity	18 articles	Scopus/WoS, including Q1 and Q2 journals
Staff Training	32 scientific staff; 115	Integration of clinic, education, and science

Discussion

The experience of the National Children's Medical Center demonstrates that modernization of specialized pediatric care extends beyond procurement of expensive equipment or introduction of isolated high-technology procedures. Sustainable outcomes are achieved through standardization of clinical processes, robust risk management, precise delegation of professional

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 6. No 05. MAY ,2026

responsibilities, and evidence-based decision-making [2,4,6]. In this regard, Joint Commission International (JCI) accreditation functioned not merely as an external evaluation mechanism but as a fundamental catalyst for internal institutional transformation.

Establishment of the "Patient Safety and Quality Control" unit at the Center fostered a management environment focused on systematic analysis and prevention of clinical incidents rather than their concealment. This approach aligns with contemporary clinical governance models, simultaneously enhancing patient safety and strengthening medical team accountability [2,6].

Furthermore, international partnerships have played a vital role in this transformation. In 2025, collaborations with organizations and foundations from the Republic of Korea (KOFIH, KOICA), the United States, and Germany secured over $800,000 in investments. These funds were instrumental in developing human capital, facilitating international clinical fellowships, and supporting the institution's high-technology laboratory infrastructure [1]. Thus, the NCMC model demonstrates significance through its harmonization of financial investment, institutional standardization, and academic development into a single coherent system.

However, these results require cautious interpretation. Analysis based on single-center data does not imply automatic replicability of this model across all regions. Regional healthcare facilities often differ substantially in personnel capacity, logistics infrastructure, referral systems, and available financial resources. Therefore, replication of the NCMC experience should be implemented gradually, based on standardized performance indicators and continuous outcome monitoring.

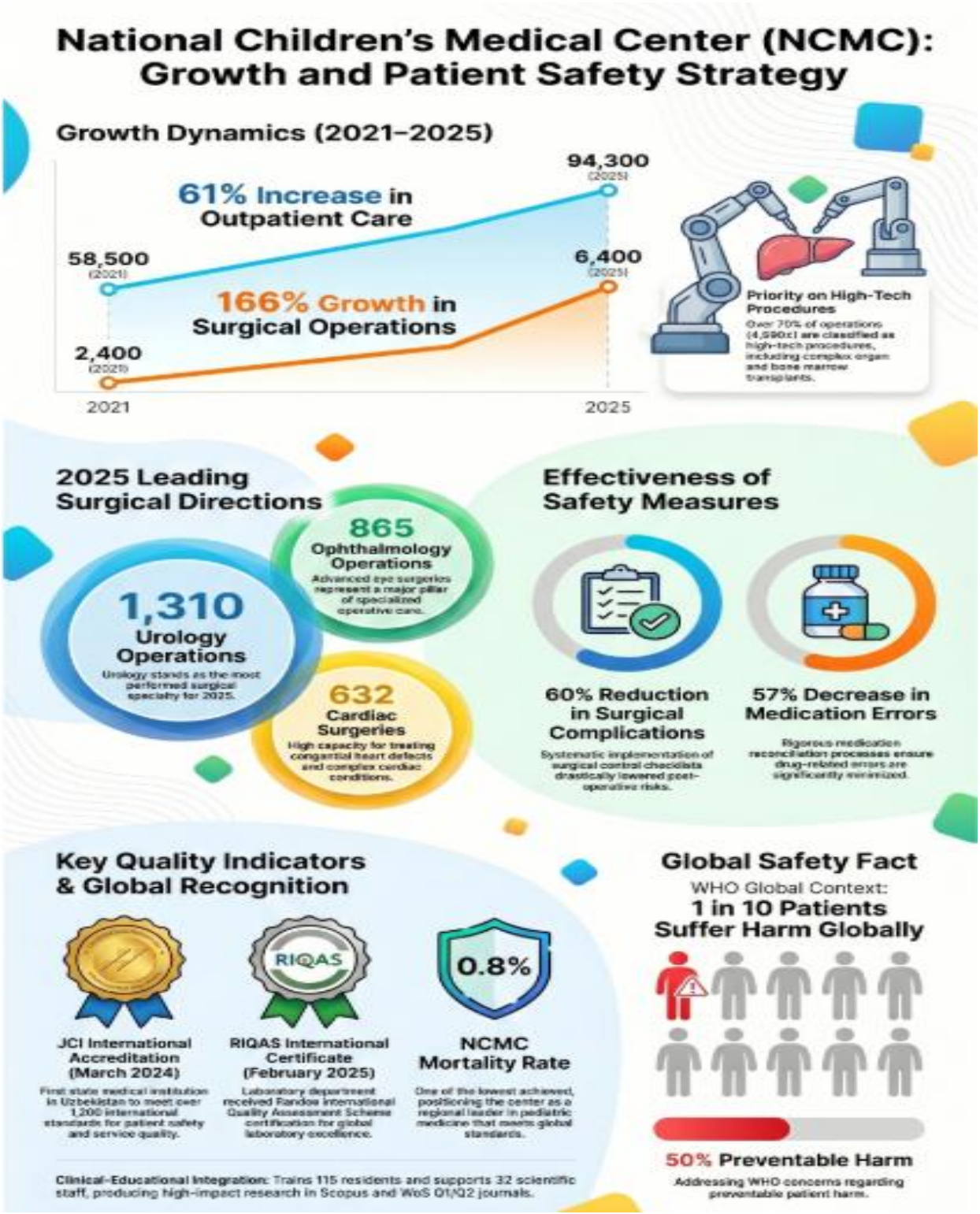
From a practical perspective, this experience defines at least three strategic priorities for tertiary pediatric centers:

1. Viewing accreditation as a continuous quality improvement cycle rather than a one-time achievement.
2. Linking high-technology medical services directly with professional training and scientific research activities.
3. Ensuring methodological and organizational knowledge transfer from central expertise to regional facilities to address disparities in pediatric care quality.

AMERICAN ACADEMIC PUBLISHER

INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

ISSN NUMBER: 2692 - 5206 Volume 6. No 05. MAY ,2026



Conclusion

The National Children's Medical Center case study illustrates successful development of an effective institutional model for modernizing specialized pediatric care in Uzbekistan. Core components of this model include governance based on international benchmarks, patient-safety-

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 6. No 05. MAY ,2026

centered clinical protocols, strategic expansion of high-technology medical services, systematic human capital development, and enhanced research productivity [1,4].

Achievement of JCI accreditation signifies more than compliance with international requirements; it demonstrates institutional capacity for systematic quality management. Performance indicators for 2025—including an exceptionally low inpatient mortality rate of 0.8% and successful completion of over 4,500 high-technology surgical procedures—validate that this transformation is substantiated by measurable clinical, organizational, and academic outcomes rather than being a formalistic exercise [1].

Going forward, scaling the NCMC experience to the regional level—specifically through establishment of the Aral Sea Medical Hub in Karakalpakstan, expansion of international accreditation practices, and implementation of rigorous patient-level outcome monitoring—is positioned to define the next phase in the evolution of Uzbekistan's pediatric healthcare system [1].

References:

1. National Children's Medical Center. Annual Report 2025. [Болалар миллий тиббиёт маркази. 2025 йил фаолият ҳисоботи.]
2. Atajanova Yu.Yu., Umarov B.Ya., Salakhitdinov Sh.N. Implementation of Patient Safety and Quality Control Units in Compliance with International Accreditation Standards. Eurasian Journal of Medical and Natural Sciences. 2025.
3. Ergashov N.Sh. et al. Patient Safety for Medical Students as an Advanced Step Towards Improving Patient Safety. Herald of TMA. 2022.
4. Joint Commission International. Joint Commission International Accreditation Standards for Hospitals. 8th edition. 2024.
5. Ministry of Health of the Republic of Uzbekistan. Order No. 52 dated February 23, 2024. [Ўзбекистон Республикаси Соғлиқни сақлаш вазирлигининг 2024 йил 23 февралдаги 52-сонли буйруғи.]
6. Asatullayev R.B., Rashidova O. Clinical Incident Reporting in Uzbekistan. Journal of International Scientific Research. 2025.