CENTER FOR DIAGNOSTICS AND TELEMEDICINE

TECHNOLOGIES OF THE FUTURE AVAILABLE IN THE PRESENT


Telegram
channel

Yuri Vasilev,

CEO of the Center for Diagnostics and Telemedicine of the Moscow Health Department, Senior Consultant for Radiology of the Moscow Health Department:

"Today, cutting-edge technologies have a profound impact on workflow efficiency. The potential benefits of leveraging artificial intelligence services in data analysis are significant. Neural networks can rapidly process and analyze data in a matter of hours, providing scientists and doctors with results to solve important social issues or make scientific discoveries.

This is our guiding principle. The Center operates under the auspices of the Social Development Complex of the Moscow City Government and Moscow Health Department. As a leading organization in radiology, we integrate algorithms into healthcare, aligning with the National AI Development Strategy. As of 2024, the Russian capital has enabled access to healthcare technologies developed in Moscow, allowing medical institutions across the Russian Federation to leverage neural networks for improved patient care.

Computer vision technologies have been operational in Moscow's healthcare system since 2020, and in 2023, a special rate for AI-based imaging study analysis under the compulsory health insurance system was introduced. In 2024, autonomous AI for analyzing fluorography and chest X-rays was implemented in outpatient departments, allowing patients to receive AI-generated reports in their electronic medical records.

Our Center's specialists significantly contribute to developing the capital's radiology service by introducing AI-based solutions and improving accessibility to diagnostic imaging for the population.

We are creating the diagnostics of the future, making it our present."

ABOUT THE CENTER

The Center for Diagnostics and Telemedicine, affiliated with the Moscow Healthcare Department, is a scientific and practical organization. The Center focuses on the development and management of radiology departments, the digital transformation of healthcare, scientific research, the integration of AI in medicine, and the education of medical professionals. Dedicated to advancing healthcare, the Center for Diagnostics and Telemedicine actively participates in specialized events at both national and international levels. We collaborate with scientific, educational, public, and IT organizations, fostering valuable partnerships and driving progress in our field.

FIVE AREAS OF ACTIVITY

- **SCIENCE:**
  We develop and implement innovative solutions for diagnostic imaging in clinical practice. Our work results in scientific papers, methodological recommendations, calibration phantoms, training programs for medical workers, datasets, computer programs, state standards, and draft regulations.

- **MODERN TECHNOLOGIES IN MEDICINE:**
  The Center provides radiology reading, interpretation services and conducts peer review. The Moscow Reference Center, the first teleradiology center in Russia, is an integral part of the public health system.

- **MEDICINE:**
  We deliver radiology report and conduct clinical audits. Our Moscow Reference Center, the first teleradiology center in Russia, operates within the public health system.

- **TESTS AND MEASUREMENTS:**
  We possess expertise in the technical control of equipment and safety assessments of devices and radiologists' workplaces. Specialists in our Testing Laboratory calculate effective doses of radiation exposure for patients.

- **EDUCATION:**
  We offer training through additional professional education programs (CME points provider). Moreover, our Center provides postgraduate studies.

HISTORY OF THE CENTER

1996

- Establishment of the Scientific and Practical Center for Medical Radiology

2000

- Establishment of the Specialized Attestation Committee
- Implementation of Teleradiology

2005

- Development of a Comprehensive Radiation Safety System in Moscow
- Support for domestic manufacturers of imaging equipment

2018 ★

- Launch of the online reporting system on radiation doses of patients during imaging procedures
- Release series of a methodological guideline, "Best Practices in Radiology"

2019 ★

- Start of standardization of diagnostic imaging and artificial intelligence technologies

2020 ★

- Foundation of the Moscow Reference Center
- A systematic approach has been organized to ensure mass diagnostics imaging of COVID-19
- Start the Experiment on the introduction of Artificial Intelligence technologies
- Establishment of the medical journal Digital Diagnostics
-

2022 ★★

- The experiment on the use of computer vision in radiology was successfully scaled up across the regions of the Russian Federation.
- National standards governing the utilization of artificial intelligence technologies came into effect
- Obtaining a license for a postgraduate program in radiology

★ *The Prize of the City of Moscow in the Field of Medicine*

★ *The Russian Public Award "Standardizer of the Year-2022" in the Nomination "For Practical Contribution to the Development of Standards of Great Economic and Social Importance"*

2010

- Development of pioneering methods for monitoring imaging equipment
- Support for the development of interventional radiology and ultrasound

2015

- Introduction of the Unified Radiological Information Service

2016

- Introduction of PET/CT program under CMI
- Initiating the radiography training programs

2017

- Development of quality control and upgrading system
- Establishment of the Center for Distance Education
- Development of a new cancer detection model

2023★

- Introduction of a pioneering service, integrated into compulsory medical insurance of the interpreting of breast cancer screening using artificial intelligence
- Launch of small-scale production of phantoms

2024

- Release of Russia's first tutorial on AI
- A platform providing all medical organizations with access to AI solutions, specifically focusing on diagnostic imaging currently being developed in Moscow
- Introduction of autonomous artificial intelligence for interpreting chest x-ray studies

★ *The Award of the Moscow Government to Young Scientists for the Development of a Test Object for Medical Research in the Field of Osteoporosis Diagnostics*

★ *Winner of the National Award "Artificial Intelligence Leaders" for Contribution to the Development of Artificial Intelligence Technologies. The award was implemented in accordance with the instructions of the President of the Russian Federation, Vladimir Putin*

Scientific co-operation

IN THE CENTRE:

5 Professors

65 Ph.D

CENTER STAFF
HAS PUBLISHED*:

516 scientific articles

146 guidelines

146 results of
intellectual activity

17 monographs,
textbooks, books

**01.01.2013 – 01.01.2024*

SCIENCE

The Center is a leader in the development and implementation of advanced solutions for radiology and instrumental diagnostics into clinical practice. The main areas of research: scientific substantiation of the digital transformation of healthcare, development of methodologies and standards for the application of artificial intelligence technologies, improvement of methods of imaging, functional diagnostics and screening, scientific development of telemedicine technologies, radiation safety, radiomics and radiogenomics, creation of test models. The results are scientific papers, methodological recommendations, phantoms for calibration of devices and training of medical workers, datasets, computer programs, National standards, and draft regulations.

- Publication of research findings in esteemed journals ranked within the first and second quartiles (Q1-Q2);
- Development of products based on artificial intelligence and reference datasets;
- Active participation in major Russian and international scientific events;
- The launch of a peer-reviewed scientific medical journal, DIGITAL DIAGNOSTICS, which has been included in Scopus and the list of the Higher Attestation Commission of the Russian Federation since 2023;
- Our team creates phantoms for medical professionals;
- Conducting comprehensive technical and clinical trials of medical devices for regulatory approval, including within the framework of the Eurasian Economic Union;
- Supporting scientific youth

AREAS OF COOPERATION

1. Research and development projects.
2. Conducting clinical and technical testing.
3. Production of ultrasound training phantoms and imaging phantom for equipment calibration purposes.

Artificial Intelligence in Healthcare Subcommittee (SC 01)

Medical software testing

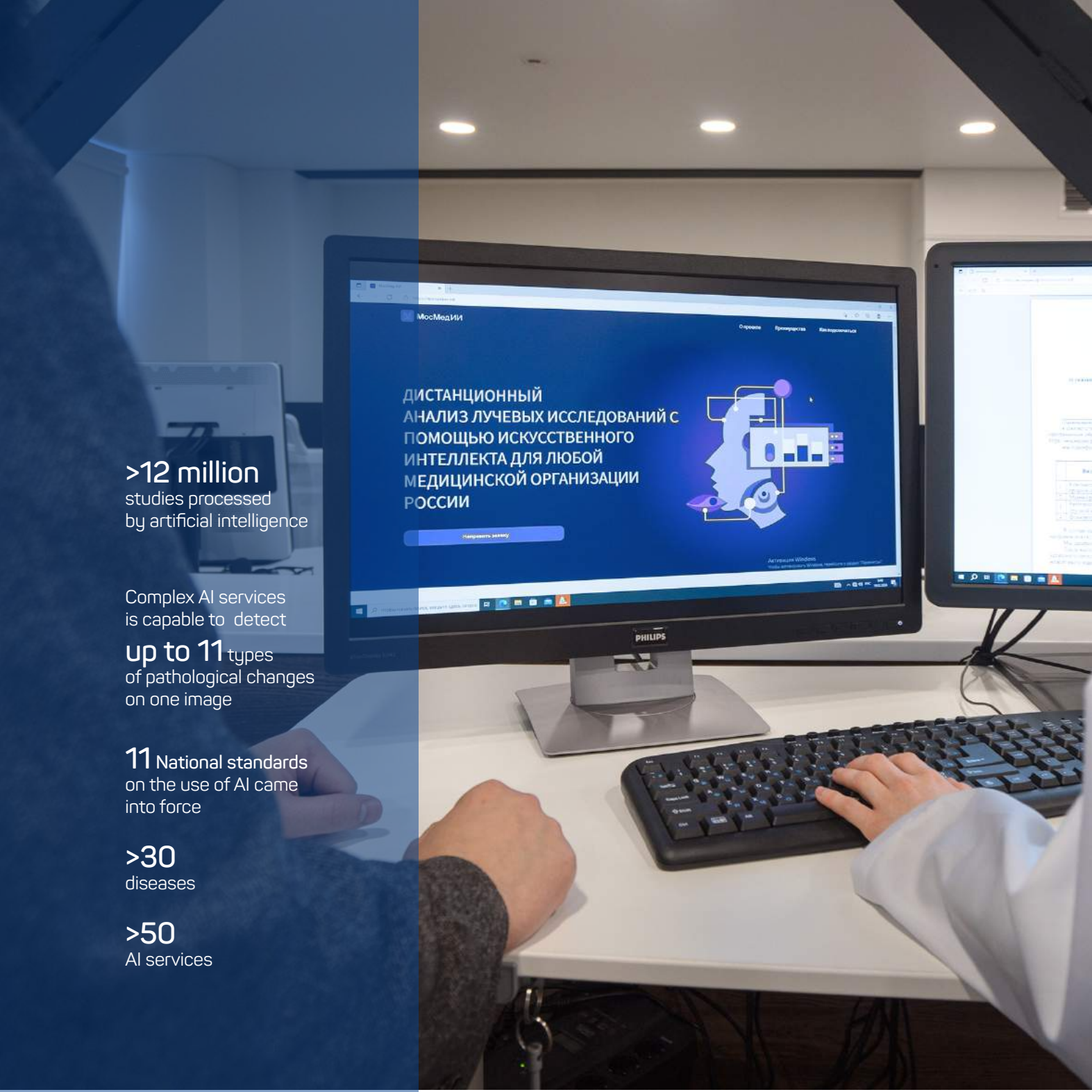
>12 million
studies processed
by artificial intelligence

Complex AI services
is capable to detect
up to 11 types
of pathological changes
on one image

11 National standards
on the use of AI came
into force

>30
diseases

>50
AI services



INTRODUCTION OF MODERN TECHNOLOGIES IN MEDICINE

In 2020, Moscow launched a pioneering scientific experiment to integrate computer vision technology into diagnostic imaging, marking a significant milestone in the development of innovative diagnostic solutions . Today, artificial intelligence can spot signs of disease and perform accurate and rapid measurements on CT, MRI scans, X-rays, mammograms, and fluorograms. Current efforts focus on selecting the best algorithms for radiologists, training medical staff, and expanding the scope of "smart" technologies. Importantly, this work is based on real-world data, with continuous feedback from doctors on algorithm performance.

Since 2023, AI-assisted image processing has been integrated into the Compulsory Health Insurance (CHI) system.

Starting in 2024, any medical organization in the country can utilize the AI algorithms developed in Moscow.

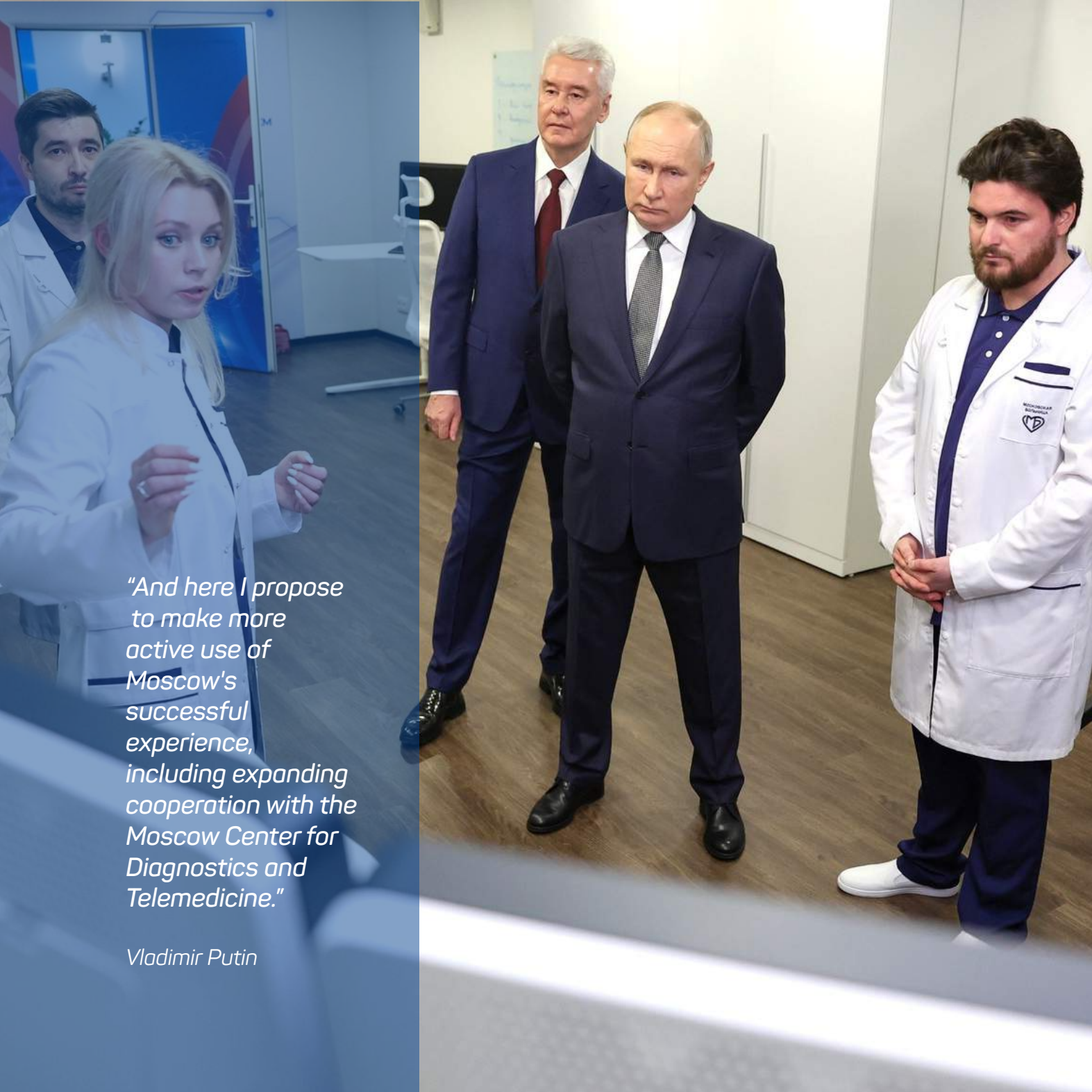
The Center's developments in AI technology have been incorporated into national medical standards and certified as medical devices. The Subcommittee 01 of TC 164, "Artificial Intelligence in Healthcare," operates under the Center's auspices.

AREAS OF COOPERATION:

1. Connecting medical organizations to AI via MOSMEDAI.RF platform.
2. Demonstrating the full cycle of AI implementation in medical practice, including the development of datasets, testing of AI services, pilot operations, continuous monitoring and control of technological and diagnostic quality parameters, and organizing feedback from users.
3. Scientific partnership.

Maturity Model of AI algorithms in Radiology

The MOSMEDAI.RF platform



"And here I propose to make more active use of Moscow's successful experience, including expanding cooperation with the Moscow Center for Diagnostics and Telemedicine."

Vladimir Putin

MEDICINE

Enhancing the quality of radiology is a main task of the Center for Diagnostics and Telemedicine. It includes a reference center, which is the first teleradiology center within Russia's public healthcare system. Here, 400 radiologists remotely interpret imaging studies performed in Moscow outpatient departments. The specialists offer second opinions in complex cases and provide consultations to doctors. Additionally, the Expertise and Quality Department conducts independent assessments of doctors' performance and consolidates data on the effectiveness of radiology services in Moscow, facilitating prompt management decisions.

AREAS OF COOPERATION:

1. Radiology Report: Offering services for interpreting mammography, X-ray, CT, and MRI studies to medical organizations.
2. Peer review: Assessment of performance and interpretation of studies according to existing standards.
3. Expertise: Professional analysis of controversial situations, providing highly qualified opinions based on collegial expert assessments.
4. Consultation: Remote assistance in interpreting studies, offering second opinions in complex or controversial diagnostic cases that require subspecialist consultation.

WEEKLY:

>130,000
radiology reports

SINCE 2020:

>185,000
peer review

>10 million
studies

>650,000
second opinions
since 2020

>15,000
consultation requests
in difficult-to-diagnose
conditions

Medical
services

ANNUALY:

>1,200
approved projects
of radiology rooms

~49 тыс.
measurements taken
individual dosimetry control

~2,000
technical certifications

>6,300
verified ionizing radiation
protection equipment

>1,500
online-reports on radiation
doses of patient

TESTS AND MEASUREMENTS

Confidence in the operation of radiotherapy and diagnostic equipment is essential for ensuring safety.

The employees of the Center conducts tests aimed at technical and radiation control in radiotherapy and radiology facilities. These testing programs are crucial for compliance with regulatory requirements and for guaranteeing the quality of diagnostics and the safety of both staff and patients.

To ensure radiation safety in diagnostic and therapy departments, the Center provides a full range of services, including:

- Support in planning and equipping radiology departments;
- Coordination of project documentation;
- Consulting on practical issues related to equipment operation;
- Conducting production supervision and audits of departments.

AREAS OF COOPERATION:

1. Radiation control.
2. Personnel dosimetric control.
3. Calculation of effective radiation doses to patients.
4. Control of operational parameters of equipment.
5. Checking protective equipment for lead equivalent.
6. Technical and dosimetric audit.
7. Certification of radiology rooms.
8. Approval of projects of radiation diagnostics rooms.
9. Consultations on different types of report.

Services

Submit online report

410
educational events

388
online professional development courses

79
webinars

>80
unique programmes available

13
continuing professional development programs

>300
lecturers

5 719
trained professionals

Figures for 2023

EDUCATION

The Center has launched of a postgraduate study '3.1.25. Diagnostic Imaging'. This is full-time course.

The Center provides comprehensive educational programs at the highest level. Training programmes of continuing medical education are held in various formats. We offer a wide range of events for both doctors and nursing staff.

In particular, the Center places a strong emphasis on the education and upskilling of nursing staff, providing training and professional development opportunities for X-ray technicians.

Practice-oriented training events are available at convenient times:

- online and offline courses;
- masterclasses conducted at clinical sites;
- free webinars;
- collections of web lecture.

CME points provider.

AREA OF CO-OPERATION:
professional training services are offered on a fee-based basis for individuals and entities, as well as on a budgetary basis for employees of organizations affiliated with the Moscow Healthcare Department.

Postgraduate studies

Additional professional education

TERRITORY OF SCIENTIFIC ACHIEVEMENTS

Telegram-channel of Yuri Vasilev, Senior Consultant for Radiology

VK

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