# BASELINE FUNCTIONAL REQUIREMENTS

# FOR AI SERVICE PERFORMANCE

(approved by the Scientific and Problem Commission of the Moscow Center for Diagnostics & Telemedicine, Protocol No. 1/2022 dated February 28, 2022)

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# GLOSSARY

BDR	_	Baseline diagnostic requirements for AI service performance
URIS	_	Unified Radiological Information Service
ESUVV	_	Unified Notification System for External Interactions
AI	_	Artificial Intelligence
AI service	_	A service based on artificial intelligence (computer vision) technology
CV	_	Computer Vision
СТ	—	Computed Tomography
MMG	_	Mammography
MRI	_	Magnetic Resonance Imaging
XR	_	X-Ray
AI/CV Experiment	_	The Experiment on the use of innovative technologies in the field of computer vision for the analysis of medical images and further use in the healthcare system of Moscow.
DICOM	_	Digital Imaging and Communications in Medicine (DICOM), a format for storing medical images obtained as a result of the study
SR	_	Structure Report, a format for storing structured data in the DICOM format

#### **1. BRIEF DESCRIPTION OF THE SUBJECT MATTER**

The extensive introduction of AI-based technologies into various aspects of human life requires coordination efforts to channel the AI development, particularly, through the standardsetting. These activities are carried out by international institutions and, at the industry level, by organizations with sufficient expertise.

The standards guide a development and implementation of individual AI systems by providing developers with specific guidelines that address the reliability and design. This helps to create a product that meets the needs of the industry and the end user.

Implementation of the standards recognized by the developers, experts, and governments generates higher confidence in AI, enables integration of AI with existing business processes and allows to create a common cybersecurity and quality management environment. AI has a potential to shape the market and boost the development of new technologies.

#### **1.1. Problem statement**

The AI/CV Experiment 2020 in Moscow identified a gap that needs to be bridged for the good of the industry, i.e., a lack of the common approach to reporting AI service results in the real-world radiology workflow.

#### 1.2. Purpose

This guideline constitutes a set of mandatory requirements for AI service operation in the URIS environment of the city of Moscow. The applicable legislation dictates that compliance with these requirements is a prerequisite for the adoption of AI in the routine practice by radiologists and clinicians.

#### 2. REQUIREMENTS FOR THE DELIVERABLES

AI service deliverables:

1) Kafka message to the Unified Notification System for External Interactions ("ESUVV") that enables prioritization of studies in the radiology worklist (triage);

2) a text report in the DICOM SR format, based on which an electronic medical record can be generated<sup>1</sup>;

3) an additional series of images containing the results of the study processing by the AI service.

#### 2.1. General requirements for the study processing

The original series containing diagnostic images cannot be altered by the AI service during the study processing.

For all modalities (except for Chest PF/XR and MMG), when choosing an image/series to be analyzed by the AI service, it is necessary to display the target organ in the image/series in full

<sup>&</sup>lt;sup>1</sup> the Procedure for organizing the healthcare document management system in the form of electronic medical records was approved by the Order of the Ministry of Health of the Russian Federation No. 947n of September 7, 2020 "On approving the Procedure for organizing the healthcare document management system in terms of medical record keeping in the form of electronic documents".

(Appendix 1) and choose a series depending on the window (W/L) and slice thickness (Appendix 2). If the target organ is not fully displayed, the AI service should generate an error message ("Series error").

In case of Chest PF/XR and MMG, a study displaying only a part of the target organ or featuring an incorrect positioning can be processed by AI provided that DICOM SR informs about such incomplete coverage. If a study contains several images in the same plane, all images that meet the requirements of Appendices 1 and 2 must be processed and made available with one DICOM SR (for each image the AI results must be stored in the "Details" section).

Possible technical defects on Chest PF/XR and MMG: wrong area of interest, incorrect positioning, removable and unremovable artifacts from foreign bodies, incorrect image capturing parameters.

Error for linear and volumetric measurements cannot deviate for more than 5% from the expert labelling. To measure angular values, a deviation of less than 2 degrees is considered acceptable.

#### 2.2. Requirements for the Kafka Message

A general probability of finding reported in the Kafka message is a value in range between 0 and 100. The results provided by comprehensive AI services must contain the probability for each type of the target finding as per the clinical task.

The probability of finding for the entire study and each target disorder is mandatory for all the studies processed by the AI service. A list of all available parameters that can be reported in the Kafka message is given in Appendices 3–6. This additional information is necessary to evaluate the diagnostic accuracy of the AI service.

At the same time, the additional series and DICOM SR must contain a probability of the finding in the range from 0.00 to 1.00.

The finding parameters must be reported as morphometry measurements and the finding stage/grade according to a commonly accepted classification (see the BDR).

#### 2.3. Requirements for the text description (DICOM SR)

AI deliverables must contain a DICOM SR file regardless of the presence or absence of a target finding. To correctly upload additional series in URIS, follow the requirements specified in Appendix 7. The structure of the DICOM SR protocol is the same for all AI services and modalities; the order of keys in DICOM SR cannot be altered. The structure of the DICOM SR report is shown in Figure 1:



Figure 1 – DICOM SR structure

The DICOM SR protocol provided by a comprehensive AI service must contain a probability of a target finding or a notification that the threshold has been exceeded. A comprehensive AI service is expected to deliver only one DICOM SR protocol regardless of the number of designated clinical tasks. The structure of DICOM SR report for comprehensive AI services:

- **modality:** type of the study modality;
- **region of interest:** anatomical region of interest;
- **study UID:** *study UID in URIS;*
- date and time of AI service report: date and time of AI service report;

- "This report was generated using an artificial intelligence algorithm" (a mandatory notification);

- "Academic purpose only" (a mandatory notification);
- service name: name of the AI service;
- service version: version number of the AI service:
- AI service function: clinical tasks assigned to the AI service;
- technical specifications: slice thickness and the number of slices in the study;

- **report:** for each target finding: labelling colour, image annotation, type of finding, finding classification (if applicable);

- **conclusion:** text of the conclusion for each target finding;
- **details of findings:** images of findings or slices with findings (if observed);

- **user manual:** information about AI service operation; description of the designated clinical task; description of how the findings should be displayed and labelled.

**The "Report"** section should contain information similar to the radiology report on the finding to generate an electronic medical record in the information system. Depending on the modality, the AI report should contain data listed in the respective sections of Appendices 9 and 11.

**The "Conclusion"** section should contain information similar to the medical conclusion about the finding to generate an electronic medical record in the information system. Depending on the modality, the AI conclusion should contain data listed in the respective sections of Appendices 10 and 11.

**The "Finding details" section** – if a pathological finding is detected this section should contain the following information:

- images of findings or slices with the findings;
- type of pathological findings;
- size of findings.

The "User manual" section should contain a list of the target pathologies detected by the AI service and the legend.

#### **2.4. Requirements for the additional series of images**

AI service should deliver the study processing result as a single additional series. The additional series should be presented in the SOPClass 1.2.840.10008.5.1.4.1.1.7 format.

A comprehensive AI service is expected to deliver an only instance of an additional series regardless of the number of designated clinical tasks.

For the studies containing several original series, the AI service should deliver a processed series of thin slices used to diagnose the target pathology.

A name of the additional series must contain the names of the AI service and the Experimental setup / target pathology. Recommended format: "service name\_*line of Experiment/target pathology*" See Appendix 13 for the recommended codes that represent the Experimental setups and target pathologies.

The additional series name should be in the 0008,103E tag (Series Description).

The brightness and contrast settings (Window W/L), as well as image resolution of the additional series must not differ from the originals. Otherwise, in case of distortions, DICOM SR should contain a message that the additional series is not of diagnostic quality.

All series of images including the additional series must contain the following:

- textual non-overlaid warning "Academic purpose only", embedded into the image;

name of the AI service. AI service name should be in the 0008,0080 tag (Institution Name);
 it can also be embedded into the image;

- version of the AI service performing the study processing. AI service version should be in the 0008,1040 tag (Institutional Department Name); it can also be embedded into the image (optional);

- date and time of the study processing. The study processing date should be in the 0008,0022 tag (Acquisition Date) in YYYYMMDD format. The study processing time should be in the 0008,0032 tag (Acquisition Time) in HHMMSS format.

In the absence of abnormalities, the additional series must contain the following message: "Target pathology is not detected". In this case, the additional series can be made of a single image.

A number of images in the additional CT, LDCT and MRI series should be no less than that in the original series processed by the AI service (except for the diagnosis of compression fractures and bone density measurement).

The functionality should allow to synchronize the additional series and the original series. See Appendix 8 for the tags required for the correct series synchronization.

Images in the series containing pathological findings should be labelled at the ScrollBar (a separate visualization bar for series level viewing in the additional series).

In presence of pathological findings, the additional series should annotate and report them in accordance with the requirements specified in Appendix 12.

To correctly upload additional series in URIS, follow the requirements specified in Appendix 7.

#### 2.5. Procedural risks

It is acceptable when the AI service cannot process a study. In this case, it returns a unique study identifier and indicates a category and details of the error. Filling in the "Error details" field is mandatory.

Error message	Error description	Error affiliation
"Server unavailable"	DICOM loading error: connection is lost or the server is not responding	NOT on the side of the AI service
"Incorrect number of images"	A received number of images differs from the expected one	NOT on the side of the AI service
"Modality error"	A modality in DICOM does not match the modality in the Kafka message and is not supported by the service	NOT on the side of the AI service
"Series error"	There are no suitable series for processing in the study	NOT on the side of the AI service
"Tag error"	Tags required by the AI service are missing or incorrect	NOT on the side of the AI service

Table 1. Categorization of errors for CT, MMG, MRI, X-ray (except for chest X-ray)

"Body part error"	A body part in the DICOM file does not match the body part in the Kafka message and is not supported by the AI service	NOT on the side of the AI service
"Image error"	The AI service failed to identify what is depicted in the DICOM file (objects, missing images, etc.)	NOT on the side of the AI service
"Other"	Other errors requiring information from the AI service, including tagging errors. It is filled in by the Service in a free form ONLY in cases not described in this table.	On the side of the AI service

Table 2.	Categorization	of errors	for chest	X-rav	and FLG
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Error message	Error description	Error details/Application rules/ Error affiliation
«Server	DICOM loading error: connection is	«DICOM loading error»
unavailable»	lost or the server is not responding	NOT on the side of the AI service
«Incorrect	Received number of images differs	Not applicable for X-ray/FLG
number of	from the expected one	
«Modality	A modality in DICOM does not	A DICOM value of the tag Modality
error»	match the modality in the Kafka	(0008,0060) does not match a
	message and is not supported by the	modality in the Kafka message"
	service	NOT on the side of the AI service
«Series error»	There are no suitable series for	Not applicable for X-ray/FLG
	processing in the study	
«Body part	A body part in the DICOM file does	"The study contains an image of the
error»	not match the body part in the Kafka	different anatomical region"
	Mathematical message and is not supported by the AI service	NOT on the side of the AI service
«Images error»	The AI service failed to identify	"Chest X-ray cropped".
	what is depicted in the DICOM file	"The study contains images only in
		the lateral projection".
		"Priority image of a low diagnostic quality".
		NOT on the side of the AI service.
«Other»	Other errors requiring information	It is filled in by the Service in a free
	from the AI service, including	form ONLY in cases not described in
	tagging errors	this table. ON THE SIDE OF THE
		AI SERVICE.

# **3. DOCUMENTATION REQUIREMENTS**

The formats, structure, and content of the documentation, as well as the extension of the functional requirements will be determined by specialists of the Research and Practical Clinical Center for Diagnostics and Telemedicine Technologies of the Moscow Healthcare Department during the AI/CV Experiment.

# Appendix 1

# TARGET ORGANS

Table 1 – Target organs

	Modality	Region of interest	Target pathology	Target organ
1			COVID-19	Lungs
2			Pulmonary emphysema	Lungs
3			Malignant neoplasms	Lungs
4			Free pleural fluid (effusion)	Pleural cavity
5			Enlarged intrathoracic lymph nodes (lymphadenopathy)	Lungs, mediastinum
6			Pulmonary tuberculosis	Lungs
7			Sarcoidosis	Lungs
8			Bronchiectatic disease	Lungs
9		Chest	Compression fracture of vertebral bodies	Thoracic and lumbar vertebrae
10		Chiese	Ischaemic heart disease (Coronary calcium)	Coronary arteries
11			Ischemic heart disease (paracardial fat)	Heart area
12	СТ		Enlarged ascending and descending thoracic aorta	Thoracic aorta
13	_		Dilation of the pulmonary trunk	Pulmonary trunk
14			Impairment of lung airness	Lungs
15			Adrenal gland lesions	Adrenal glands
16			Focal lesions in chest bones	Vertebrae, ribs, breastbone, shoulder blades, collarbones
17			Rib/s fracture	Ribs
18			Kidney stones	Kidneys, urinary tract
19			Liver lesions	Liver
20			Renal lesions	Kidneys
21		Abdomen	Adrenal gland lesions	Adrenal glands
22			Compression fracture of vertebral bodies	Thoracic and lumbar vertebrae
23			Dilated abdominal aorta	Abdominal aorta
24			Gallbladder stones	Gallbladder

	Modality	Region of interest	Target pathology	Target organ
25			Routine liver measurements	Liver
26			Routine kidney measurements	Kidneys
27			Routine measurements of spleen and pancreas	Spleen, pancreas
28			Focal lesions in the abdominal and pelvic bones	Vertebrae, pelvic bones, sacrum, tailbone, thighbones
29			Ishemic stroke	Brain
30	СТ	Brain	Intracranial hemorrhage	Brain
31			Routine measurements of the brain	Brain
32	XR/PF	Chest	12 disease groups	Lungs, mediastinum, ribs
33			Fracture	Tubular bones
34			Arthrosis	Knee joint, hip joint
35			Flat foot	Foot
36	VD	Musculoskeletal	Fracture of vertebral bodies	Cervical spine, thoracic spine, lumbosacral spine
37		system	Osteochondrosis	Cervical spine, thoracic spine, lumbosacral spine
38			Scoliosis	Thoracic spine, lumbosacral spine
39			Spondylolisthesis	Cervical spine, lumbosacral spine
40	-	Head	Sinusitis	Paranasal sinuses
41	MMG	Breast	Breast cancer	Breasts
42			Multiple sclerosis	Brain
43		Brain	Intracranial neoplasms	Brain
44			Routine measurements of the brain	Brain
45	MRI	Cervical spine	Protrusions and hernias of the intervertebral discs, spinal stenosis	Cervical spine
46	7		Focal lesions in the vertebrae	Cervical spine
47		Thoracic spine	Protrusions and hernias of the intervertebral discs, spinal stenosis	Thoracic spine
48			Focal lesions in the vertebrae	Thoracic spine

	Modality	Region of interest	Target pathology	Target organ
49		Lumbosacral	Protrusions and hernias of the intervertebral discs, spinal stenosis	Lumbosacral spine
50		spille	Focal lesions in the vertebrae	Lumbosacral spine
51		Knee joint	Chondromalacia	Knee joint
52		Lesser pelvis (f)	Routine measurements of the uterus	Uterus, ovaries
53		Lesser pelvis (m)	Routine measurements of the prostate gland	Prostate gland

Appendix 2

# **SERIES SELECTION**

Series selection algorithm:

1. Select the priority series with a specified slice thickness.

2. Window assessment (W/L). If the selected series cannot be displayed in the target window, display the results in a suitable window\*.

Table 2.1 -	- Series	selection
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Modality	Region of interest	Target pathology	Window selection (W/L)	Slice thickness**	
		COVID-19	Lung window	≤3 mm. Priority is given to the minimum thickness	
		Malignant neoplasms of the lungs	Lung window		
		Compression fracture of vertebral bodies	Soft tissue		
	Chest	Free pleural fluid (effusion)	Soft tissue		
СТ		Ischaemic heart disease (Coronary calcium)	Soft tissue		
		Thoracic aortic aneurysm and measurement of the thoracic aorta diameter	Soft tissue		
			Dilation of the pulmonary trunk and measurement of the pulmonary trunk diameter	Soft tissue	
		Enlarged intrathoracic lymph nodes (lymphadenopathy)	Soft tissue		
		Pulmonary emphysema	Lung		
		Pulmonary tuberculosis	Lung		

Modality	Region of interest	Target pathology	Window selection (W/L)	Slice thickness**
		Sarcoidosis	Lung	
		Bronchiectatic disease	Lung	
		Ischemic heart disease (paracardial fat)	Soft tissue	
		Impairment of lung airness	Lung	
		Adrenal gland lesions	Soft tissue	
		Focal lesions in chest bones	Bone	
		Rib/s fracture	Bone	
	Brain	Intracranial hemorrhage	Brain	≤5 mm. Priority is given to the minimum thickness
		Ishemic stroke	Brain	
		Routine measurements of the brain	Brain	
СТ		Kidney stones	Bone	≤3 mm. Priority is given to the minimum thickness
		Adrenal gland lesions	Soft tissue	
	Abdomen	Liver lesions		
		Renal lesions		
		Compression fracture of vertebral bodies	Soft tissue	

Modality	Region of interest	Target pathology	Window selection (W/L)	Slice thickness**
		Abdominal aortic aneurysm and measurement of the abdominal aorta diameter	Soft tissue	
		Gallbladder stones	Soft tissue	
		Routine liver measurements	Soft tissue	
		Routine kidney measurements	Soft tissue	
		Routine measurements of spleen and pancreas	Soft tissue	
		Focal lesions in the abdominal and pelvic bones	Bone	
XR	Chest	Pleural effusion, pneumothorax, focal opacity, infiltration/consolidation, dissemination, cavity, atelectasis, calcification/calcified pulmonary nodule, mediastinal widening, cardiomegaly, cortical bone fracture, consolidated fracture	Frontal view	
	Wrist joint	Fracture	Two views	
	Shoulder joint	Fracture	Frontal view	
	Hip joint	Arthrosis	Frontal view	

Modality	Region of interest	Target pathology	Window selection (W/L)	Slice thickness**
		Fracture	Frontal view	
	Knee joint	Arthrosis	Frontal view	
	Ankle joint	Fracture	Two views	
	East	Longitudinal flat foot	Lateral view	
	Foot	Transverse flat foot	Frontal view	
	Head	Sinusites	Frontal view	
		Fracture of vertebral bodies	Lateral view	
	Spine	Osteochondrosis	Two views	
		Scoliosis	Frontal view	
		Spondylolisthesis	Lateral view	
MMG	Breast	Breast cancer	Two views	
MDI	D	Multiple sclerosis	Axial T2 Axial FLAIR Contrast-enhanced T1 In case axial FLAIR is unavailable, processing the sagittal FLAIR series is possible	Post-contrast series: ≤2 mm. Non-contrast series: ≤5 mm, with the priority given to the minimum thickness
MRI	Brain	Intracranial neoplasms	Contrast-enhanced T1 – all planes + FLAIR in all planes	
		Routine measurements	Axial T2 + Axial T2 FLAIR + T1 sagittal Sagittal T2 FLAIR (in absence of Axial T2 FLAIR)	

Modality	Region of interest	Target pathology	Window selection (W/L)	Slice thickness**		
	Comical anina	Protrusions and hernias of the discs, spinal stenosis	Sagittal T2-WI + axial T2-WI	≤4 mm. Priority is given to the minimum thickness		
	Cervical spine	Focal lesions in the vertebrae	Sagittal T2-WI + sagittal T2-WI + sagittal T2 STIR *Post-contrast sagittal T1 (if available)	≤4 mm. Priority is given to the minimum thickness		
	Thorosis origo	Protrusions and hernias of the discs, spinal stenosis	Sagittal T2-WI + axial T2-WI	≤4 mm. Priority is given to the minimum thickness		
	rnoracie spine	Focal lesions in the vertebrae	Sagittal T2-WI + sagittal T2-WI + sagittal T2 STIR *Post-contrast sagittal T1 (if available)	≤4 mm. Priority is given to the minimum thickness		
	Lumbosacral	Protrusions and hernias of the discs, spinal stenosis	Sagittal T2-WI + axial T2-WI	≤4 mm. Priority is given to the minimum thickness		
	spine	Focal lesions in the vertebrae	Sagittal T2-WI + sagittal T2-WI + sagittal T2 STIR *Post-contrast sagittal T1 (if available)	≤4 mm. Priority is given to the minimum thickness		
	Knee joint	Chondromalacia	Axial PD FS Sagittal PD FS Coronal PD FS	≤4 mm. Priority is given to the minimum thickness		
	Lossor polyic	Routine measurements of the uterus	Sagittal T2 + axial T2	<ul> <li>≤4 mm.</li> <li>Priority is given to the minimum thickness</li> </ul>		
	Lesser pervis	Routine measurements of the prostate gland	Sagittal T2 + axial T2	<ul> <li>≤4 mm.</li> <li>Priority is given to the minimum thickness</li> </ul>		
<ul> <li>* https://radiopaedia.org/articles/windowing-ct</li> <li>** Dalrymple N. C. et al. Price of isotropy in multidetector CT // Radiographics. – 2007. – Vol. 27. – №. 1. – Р. 49–62</li> </ul>						

#### Table 2.2 ALGORITHM FOR DETERMINING THE PROJECTION X-RAY IMAGING

- 1. Analyze the *DICOM mer (0018, 1400) Acquisition Device Processing Descr* 
  - a. A frontal projection, if a value is equal to the value from the list:
  - ГРУДНАЯ КЛЕТКА, Пр стоя
  - ГРУДНАЯ КЛЕТКА, ПЕРЕДНЯЯ Р->А
  - postero-anterior^Factory1
  - b. A lateral projection, if a value is equal to the value from the list:
  - ГРУДНАЯ КЛЕТКА, БОК стоя
  - ГРУДНАЯ КЛЕТКА, БОКОВАЯ
  - right-lateral^Factory1
- 2. If there is no DICOM Tag from item 1 or there is no value from the list, then look at the *DICOM mez (0018, 5101) View Position*

a. A frontal projection, if a value is "AP"

3. If there is no DICOM Tag from items 1 and 2 or there is no value from the lists, then look at the *DICOM mez (0054, 0220) View Code Sequence tab (0008, 0104) Code Meaning* 

a. A frontal projection, if a value is "posteroanterior"b. A lateral projection, if a value is "lateral"

4. If there are no these tags, then a projection cannot be determined.

#### Table 2.3 SERIES LABELING OPTIONS IN MRI STUDIES

#### Types of weighted imaging:

T2 T1 FLAIR/TIRM STIR PD FS

### **Planes:**

Axial – AX, TRA Sagittal – SAG, SG Coronal – COR, CO

#### Series with contrast:

CE POST CE CONTR Contrast +C GD

In the final name of series for processing, a combination of labeling from different sections is possible. In this case, labeling options can be indicated in different registers (lower case, upper case), separated by a space, hyphen, underscore. Examples:

AX 3D T1CE, ax 3D T1 MPR, 3D-MP-RAGE GD.

Appendix 3

# DATA FOR KAFKA MESSAGE

Table 3.1 – Data for Kafka message

Clinical task solved by AI service in accordance with the baseline diagnostic requirements Modality	Key description*	Value	Comment	JSON key	Example of data output
	Study UID	Text		studyIUID	
				aiResult	
	UID of additional series set by AI			seriesIUID	
	Presence of a finding	true or false		pathologyFlag	
	General probability of a finding in the entire study	Integer number in the range of 0–100		confidenceLevel	
	AI service model number			modelId	
	AI service version			modelVersion	
	Report	Text		report	
All the Experimental setups	Conclusion	Text		conclusion	
				dateTimeParams	
	Time of study download start from PMM (Product Model Management)	ISO 8601 format <sup>2</sup>		downloadStartDT	
	Time of study download end from PMM	ISO 8601 format <sup>22</sup> выше		downloadEndDT	
	Time of study processing start by AI	ISO 8601 format		processStartDT	
	Time of study processing end by AI	ISO 8601 format		processEndDT	

<sup>2</sup> Time format YYYY-MM-DDThh:mm:ss.sss+hhmm

	Presence of "norm" in the study	Integer number - 0 or 1	Norm	1 – study does not contain an abnormality; 0 – study contains an abnormality
			ct_covid	
	Probability of COVID-19 lung involvement	Integer number in the range of 0–100	ct_covid_conf_level	
	Degree of involvement: CT-0	Integer number in the range of 0–100	ct_covid_ct0	
Detection of CT signs consistent with COVID-19 (coronavirus) lung involvement	Degree of involvement: CT-1	Integer number in the range of 0–100	ct_covid_ct1	
	Degree of involvement: CT-2	Integer number in the range of 0–100	ct_covid_ct2	
	Degree of involvement: CT-3	Integer number in the range of 0–100	ct_covid_ct3	
Cnest C1	Degree of involvement: CT-4	Integer number in the range of 0–100	ct_covid_ct4	
	Percentage of COVID-19 lung involvement (left lung)	Integer number in the range of 0–100	ct_covid_left	
	Percentage of COVID-19 lung involvement (right lung)	Integer number in the range of 0–100	ct_covid_right	
			ct_emphysema	
	Probability of emphysema	Integer number in the range of 0–100	ct_emphysema_conf_level	
Emphysema extent	Percent emphysema in both lungs	Integer number in the range of 0–100	ct_emphysema_both	
Chest CT	Percent emphysema (left lung)	Integer number in the range of 0–100	ct_emphysema_left	
	Percent emphysema (right lung)	Integer number in the range of 0–100	ct_emphysema_right	

				<ul> <li>1</li> </ul>	
				ct_lc	
Detection of CT signs	Probability of the signs of a malignant neoplasm in the entire study	Integer number in the range of 0–100		ct_lc_conf_level	
consistent with malignant neoplasm in the lungs	Average size of the neoplasm, mm	Text	Specified format	ct_lc_average_size	#1: 6 mm; #2: 6 mm; #3: 7 mm; #4: 9 mm
Chest CT	Volume (mm <sup>3</sup> ) of a pulmonary nodule	Text	Specified format	ct_lc_volume	#1: 101 mm <sup>3</sup> ; #2: 117 mm <sup>3</sup> ; #3: 200 mm <sup>3</sup> ; #4: 294 mm <sup>3</sup>
				ldct_cancer	
	Presence of lung cancer signs in the entire study	Integer number in the range of 0–100		ldct_cancer_conf_level	
	Diameter of each detected pulmonary nodule	Text	Specified format	ldct_cancer_size	#1: 6 mm; #2: 6 mm; #3: 7 mm; #4: 9 mm
Detection of LDCT signs	Diameter of each detected pulmonary nodule, mm <sup>3</sup>	Text	Specified format	ldct_cancer_volume	#1: 101 mm <sup>3</sup> ; #2: 117 mm <sup>3</sup> ; #3: 200 mm <sup>3</sup> ; #4: 294 mm <sup>3</sup>
neoplasm in the lungs	Lung-RADS 0	Integer number in the range of 0–100		ldct_cancer_rads0	
Chest LDCT	Lung-RADS 1	Integer number in the range of 0–100		ldct_cancer_rads1	
	Lung-RADS 2	Integer number in the range of 0–100		ldct_cancer_rads2	
	Lung-RADS 3	Integer number in the range of 0–100		ldct_cancer_rads3	
	Lung-RADS 4A	Integer number in the range of 0–100		ldct_cancer_rads4a	
	Lung-RADS 4B	Integer number in the range of 0–100		ldct_cancer_rads4b	

				ct_genant	
<b>Detection and localization</b>	Probability of at least one vertebra	Integer number in		ct genant conf level	
of compression vertebral	with over 25 % height loss	the range of 0–100			
fractures with a degree of	Listing the localizations of all				ZZ: XX
vertebral body deformity	vertebrae with height loss over	Text	Specified format	ct genant degree	
of over 25% according to	25% indicating the degree of		~ P • • • • • • • • • • • • • • • • • •		
the Genant semi-	compression				
quantitative scale, grades	Suspected osteoporosis as per the	Text	Specified format	ct_genant_acr	
2–3	ACR 2018, ISCD 2019 Citteria		_	-	77. VVV
Chest CT	density (or HU) of the cancellous bone of Th12–L3 vertebral bodies indicating the vertebra index	Text	Specified format	ct_genant_hu	
				ct_pleural	
Detection of free plannel	Probability of pleural effusion	Integer number in the range of 0–100		ct_pleural_conf_level	
fluid (effusion)	Effusion volume (left lung), ml	Integer number		ct_pleural_volume_left	
nulu (chusion)	Effusion volume (right lung), ml	Integer number		ct_pleural_volume_right	
Chest CT	Mean effusion density (left lung), HU	Integer number		ct_pleural_density_left	
	Mean effusion density (right lung), HU	Integer number		ct_pleural_density_right	
				ct_lymphadenopathy	
Detection of enlarged	Probability of enlarged lymph nodes	Integer number in the range of 0–100		ct_lymphadenopathy_conf_level	
intrathoracic lymph nodes	Size of the largest lymph node,	Integer number		ct_lymphadenopathy_size	
(lympnadenopathy)	mm		~		
Chest CT	Calcified intrathoracic lymph	Text	Specified format	ct_lymphadenopathy_calcificati	Example:
Cnest C I	nodes	TT (	G	on	Presence
	classification of lymph nodes as per IASLC	Text	Specified format	ct_lymphadenopathy_laslc	#1: IASLC 3p

Detection of bronchiectasis			ct_bronchiectasis	
Chost CT	Probability of bronchiectasis	Integer number in the range of 0–100	ct_bronchiectasis_conf_level	
Chest CT	Broncho-arterial ratio	Number	ct_bronchiectasis_ratio	
Detection of CT signs			ct_tuberculosis	
consistent with pulmonary tuberculosis	Probability of tuberculosis	Integer number in the range of 0–100	ct_tuberculosis_conf_level	
Chest CT				
			ct_paracardial	
Paricardial fat volume	Probability of paricardial fat $\geq$ 200 ml	Integer number in the range of 0–100	ct_paracardial_conf_level	
Chest CT	Paracardial fat volume, ml	Integer number	ct_paracardial_volume	
	Mean paracardial fat density, HU	Integer number	ct_paracardial_density	
			ct_agatston	
	Probability of coronary calcium	Integer number in the range of 0–100	ct_agatston_conf_level	
	Numerical value of the Agatston score	Integer number	ct_agatston_number	
	CAC-DRS 0	Integer number in the range of 0–100	ct_agatston_drs0	
Coronary calcium score	CAC-DRS 1	Integer number in the range of 0–100	ct_agatston_drs1	
Chest CT/ LDCT	CAC-DRS 2	Integer number in the range of 0–100	ct_agatston_drs2	
	CAC-DRS 3	Integer number in the range of 0–100	ct_agatston_drs3	
	LM	Integer number	ct_agatston_lm	
	LAD	Integer number	ct_agatston_lad	
	LCx	Integer number	ct_agatston_lcx	
	RCA	Integer number	ct_agatston_rca	

				ct_aorta_chest	
	Probability of aortic dilation according to one of the signs (see the signs of pathology)	Integer number in the range of 0–100		ct_aorta_chest_conf_level	
Dilation of ascending and descending thoracic aortas	Largest diameter of the ascending aorta along the short axis, mm	Integer number		ct_aorta_chest_ascending	
Chest CT/ LDCT	Largest diameter of the descending aorta along the short axis, mm	Integer number		ct_aorta_chest_descending	
	Calcifications in the thoracic aorta walls	Text	Specified format	ct_aorta_chest_calcification	Example: Absence
				ct_trunk	
Dilation of the pulmonary trunk	Probability of the pulmonary trunk dilation of over 28 mm	Integer number in the range of 0–100		ct_trunk_conf_level	
Chest CT/ LDCT	Largest diameter of the pulmonary trunk along the short axis, mm	Integer number		ct_trunk_max	
				ct_sarcoidosis	
	Probability of sarcoidosis	Integer number in the range of 0–100		ct_sarcoidosis_conf_level	
Detection of sarcoidosis	Sarcoidosis stage I	Integer number in the range of 0–100		ct_sarcoidosis_stage1	
Chest CT	Sarcoidosis stage II	Integer number in the range of 0–100		ct_sarcoidosis_stage2	
	Sarcoidosis stage III	Integer number in the range of 0–100		ct_sarcoidosis_stage3	
	Sarcoidosis stage IV	Integer number in the range of 0–100		ct_sarcoidosis_stage4	

Detection of signs			ct_lung_pneumo
consistent with the impairment of lung airness Chest CT	Probability of lung airness impairment	Integer number in the range of 0–100	ct_lung_pneumo_conf_level
			ct_chest_skeleton
Detection of signs	Probability of focal lesions in the chest bones	Integer number in the range of 0–100	ct_chest_skeleton_nodule _conf_level
lesions in the chest bones	Mean density of the focal lesions	Integer number	ct_chest_skeleton_nodule_hu
Chest CT	Diameter of abnormality the size of 5 to 10 mm, mm	Integer number	ct_chest_skeleton_nodule_lin
	Linear dimensions (long and perpendicular short axes; vertical) for abnormality the size of >10 mm, mm	Integer number	ct_chest_skeleton_nodule_lin2
Detection of CT signs			ct_rib_fracture
consistent with rib fracture	Probability of signs of rib fracture	Integer number in the range of 0–100	ct_rib_fracture_conf_level
	Fracture site (rib number)	Text	ct_rib_fracture_local
Chest CT	Degree of diastasis	Integer number	ct_rib_fracture_diast

Table 3.1	(continued)
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			ct_urinary	
	Probability of the presence of radiodense urinary calculi	Integer number in the range of 0–100	ct_urinary_conf_level	
	Size of the calculus / the largest calculus (maximum) in the right kidney, mm	Integer number	ct_urinary_rk_max_size	
	Size of the calculus / the largest calculus (perpendicular to the maximum calculus) in the right kidney, mm	Integer number	ct_urinary_rk_additional_size	
Detection of	Size of the calculus / the largest calculus (vertical) in the right kidney, mm	Integer number	ct_urinary_rk_vertical_size	
signs of urolithiasis	Mean density of the calculus / the largest calculus in the right kidney, HU	Integer number	ct_urinary_rk_density	
Abdominal CT	Size of the calculus / the largest calculus (maximum) in the left kidney, mm	Integer number	ct_urinary_lk_max_size	
	Size of the calculus / the largest calculus (perpendicular to the maximum calculus) in the left kidney, mm	Integer number	ct_urinary_lk_additional_size	
	Size of the calculus / the largest calculus (vertical) in the left kidney, mm	Integer number	ct_urinary_lk_vertical_size	
	Mean density of the calculus / the largest calculus in the left kidney, HU	Integer number	ct_urinary_lk_density	
	Size of the calculus / the largest calculus (maximum) in the right ureter, mm	Integer number	ct_urinary_ru_max_size	

Size of the calculus / the largest calculus (perpendicular to the maximum calculus) in the right ureter, mm	Integer number	ct_urinary_ru_additional_size
Size of the calculus / the largest calculus (vertical) in the right ureter, mm	Integer number	ct_urinary_ru_vertical_size
Mean density of the calculus / the largest calculus in the right ureter, HU	Integer number	ct_urinary_ru_density
Size of the calculus / the largest calculus (maximum) in the left ureter, mm	Integer number	ct_urinary_lu_max_size
Size of the calculus / the largest calculus (perpendicular to the maximum calculus) in the left ureter, mm	Integer number	ct_urinary_lu_additional_size
Size of the calculus / the largest calculus (vertical) in the left ureter, mm	Integer number	ct_urinary_lu_vertical_size
Mean density of the calculus / the largest calculus in the left ureter, HU	Integer number	ct_urinary_lu_density
Size of the calculus / the largest calculus (maximum) in the bladder, mm	Integer number	ct_urinary_bl_max_size
Size of the calculus / the largest calculus (perpendicular to the maximum calculus) in the bladder, mm	Integer number	ct_urinary_bl_additional_size
Size of the calculus / the largest calculus (vertical) in the bladder, mm	Integer number	ct_urinary_bl_vertical_size
Mean density of the calculus / the largest calculus in the bladder, HU	Integer number	ct_urinary_bl_density

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			ct_abdomen_skeleton	
Detection of signs consistent with the focal	Probability of focal lesions in the bones	Integer number in the range of 0– 100	ct_abdomen_skeleton_nodule _conf_level	
lesions in the skeleton	Mean density of the focal lesion	Integer number	ct_abdomen_skeleton_nodule_hu	
bones	Diameter of abnormality the size of 5 to 10 mm, mm	Integer number	ct_abdomen_skeleton_nodule_lin	
Abdominal CT	Linear dimensions (long and perpendicular short axes; vertical) for abnormality the size of >10 mm, mm	Text. Размеры через ;	ct_abdomen_skeleton_nodule_lin2	
			ct_liver_cancer	
	Probability of liver lesions	Integer number in the range of 0–100	ct_liver_cancer_conf_level	
	Localization of the lesions by lever lobe (right or left)	Text	ct_liver_cancer_lobe	Example: Right lobe
	Maximum lesion density (for lesions of $\geq$ 5 mm), HU	Text	ct_liver_cancer_max_density	Example: #1: 9 HU; #2: 31 HU
Detection of liver lesions	Minimum lesion density (for lesions of $\geq$ 5 mm), HU	Text	ct_liver_cancer_min_density	Example: #1: 4 HU; #2: 28 HU
Abdominal CT	Maximum size / diameter of the lesion, mm	Text	ct_liver_cancer_long_size	Example: #1: 42 mm; #2: 50 mm
	Size of the lesion (perpendicular to the maximum size), mm	Text	ct_liver_cancer_additional_size	Example: #1: 28 mm; #2: 40 mm
	Mean liver density, HU	Integer number	ct_liver_cancer_density	
	Size of the lesion (vertical), mm	Text	ct_liver_cancer_vertical_size	Example: #1: 35 mm; #2: 49 mm

Detection of CT signs			ct_bladder_stones	
consistent with gallbladder	Probability of stones in the gallbladder	Integer number in the range of 0–100	ct_bladder_stones_conf_level	
Ab dominal CT	Integer number for the largest stone diameter	Integer number	ct_bladder_stones_max	
Abdominal C I	Number of stones	Integer number	ct_bladder_stones_n	
			ct_kidneys_lesion	
	Probability of renal lesions	Integer number in the range of 0–100	ct_kidneys_lesion_conf_level	
	Size of each lesion (maximum), mm	Integer number	ct_kidneys_lesion_max_size	
Detection of CT signs	Localization of the lesions by organ (right or left kidney)	Text	ct_kidneys_lesion_rol	Example: Left kidney
	Maximum lesion density (for lesions of $\geq$ 5 mm), HU	Text	ct_kidneys_lesion_max_density	Example: #1: 9 HU; #2: 31 HU
lesions	Minimum lesion density (for lesions of $\geq$ 5 mm), HU	Text	ct_kidneys_lesion_min_density	Example: #1: 4 HU; #2: 28 HU
Abdominai C I	Maximum size / diameter of the lesion, mm	Text	ct_kidneys_lesion_long_size	Example: #1: 42 mm; #2: 50 mm
	Size of the lesion (perpendicular to the maximum size), mm	Text	ct_kidneys_lesion_additional_size	Example: #1: 28 mm; #2: 40 mm
	Size of the lesion (vertical), mm	Text	ct_kidneys_lesion_vertical_size	Example: #1: 35 mm; #2: 49 mm

			ct_adrenal
	Probability of adrenal lesions	Integer number in the range of 0– 100	ct_adrenal_conf_level
	Axial size of the largest mass in left adrenal gland along the short axis, mm	Integer number	ct_adrenal_la_lesion_max_size
	Axial size of the largest mass in right adrenal gland along the short axis, mm	Integer number	ct_adrenal_ra_lesion_max_size
Detection of adrenal lesions Abdominal CT Chest CT	Size of the left adrenal gland body along the short axis (thickness), mm	Integer number	ct_adrenal_la_body_size
	Size of the medial limb of the left adrenal gland along the short axis (thickness), mm	Integer number	ct_adrenal_la_medial_size
	Size of the lateral limb of the left adrenal gland along the short axis (thickness), mm	Integer number	ct_adrenal_la_lateral_size
	Size of the right adrenal gland body along the short axis (thickness), mm	Integer number	ct_adrenal_ra_body_size
	Size of the medial limb of the right adrenal gland along the short axis (thickness), mm	Integer number	ct_adrenal_ra_medial_size
	Size of the lateral limb of the right adrenal gland along the short axis (thickness), mm	Integer number	ct_adrenal_ra_lateral_size

Detection and				ct_comp_fracture	
localization of compression vertebral	Probability of at least one vertebra with over 25 % height loss	Integer number in the range of 0–100		ct_comp_fracture_conf_level	
of vertebral body deformity of over 25%	Listing the localizations of all vertebrae with height loss over 25% indicating the degree of compression	Text		ct_comp_fracture_localization	
according to the Genant semi-quantitative scale, grades 2–3	Measurement of the mineral density (or HU) of the cancellous bone of Th12–L3 vertebral bodies indicating the vertebra index Suspected osteoporosis as per the ACP 2018 JSCD 2019 criteria	Text		ct_comp_fracture_hu	
	ACK 2016, ISCD 2019 Cilicita			ct_liver	
Automation of routine	Vertical dimension of the right liver lobe	Integer number		ct_liver_right_lobe_a	
liver measurements (dimensions, liver	Anteroposterior dimension of the right liver lobe	Integer number		ct_liver_right_lobe_b	
density, choledochus diameter, portal vein	Transverse dimension of the right liver lobe	Integer number		ct_liver_right_lobe_c	
diameter)	Mean density of the liver parenchyma	Integer number		ct_liver_hu	
Abdominal CT	Maximum diameter of the common bile duct	Integer number		ct_liver_bile_duct	
	Portal vein diameter	Integer number		ct_liver_portal	
Maria				ct_aorta_abdomen	
abdominal aorta	Probability of dilated abdominal aorta	Integer number in the range of 0–100		ct_aorta_abdomen_conf_level	
dilation	Largest diameter of the abdominal aorta, mm	Integer number		ct_aorta_abdomen_max	
Abdominal CT	Calcifications in the abdominal aorta walls	Text	Specifie d format	ct_aorta_abdomen_calcification	Example: Absence

Table 3.1	(continued)	
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			ct_kidney	
	A position of the upper edge of each kidney in relation to the vertebral body	Text	ct_kidney_vert	
	Length of the left kidney	Integer number	ct_kidney_r_a	
	Width of the left kidney	Integer number	ct_kidney_r_b	
	Length of the right kidney	Integer number	ct_kidney_l_a	
	Width of the right kidney	Integer number	ct_kidney_l_b	
Automation of routine	Smallest thickness of right kidney parenchyma	Integer number	ct_kidney_r_parenchyma	
(kidney size, pelvicalyceal	Smallest thickness of left kidney parenchyma	Integer number	ct_kidney_l_parenchyma	
system size) Abdominal CT	Largest dimensions of the right renal pelvis in the axial plane, mm	Integer number	ct_kidney_r_pelvis_ax	
	Largest dimensions of the right renal pelvis in the frontal plane, mm	Integer number	ct_kidney_r_pelvis_fr	
	Largest dimensions of the left renal pelvis in the axial plane, mm	Integer number	ct_kidney_l_pelvis_ax	
	Largest dimensions of the left renal pelvis in the frontal plane, mm	Integer number	ct_kidney_l_pelvis_fr	
			ct_spleen	
Automation of routine	Spleen length	Integer number	ct_spleen_a	
measurements of spleen	Spleen width	Integer number	ct_spleen_b	
and pancreas (size, density	Spleen height	Integer number	ct_spleen_c	
of the spieen and pancreas)	Head of the pancreas	Integer number	ct_spleen_head	
Abdominal CT	Body of the pancreas	Integer number	ct_spleen_body	
Abdominal CT	Tail of the pancreas	Integer number	ct_spleen_tail	

			ct_stroke	
	Probability of acute ischemic stroke areas	Integer number in the range of 0–100	ct_stroke_conf_level	
Detection of acute ischemic stroke and its	Indication of the basin of acute ischemic stroke	Text	ct_stroke_local	ACA, MCA, PCA, VBB
ASPECTS score Head CT	ASPECTS	Integer number in the range of 0–10	ct_stroke_aspects0	
incau e i	ASPECTS not applicable	Integer number: 0 or 100	ct_stroke_aspects	0 – the score is applicable 100 – the score is not applicable
			ct_brain	
Detection of hemorrhage and its automatic volume calculation in ml or cm <sup>3</sup> Head CT	Probability of hemorrhage	Integer number in the range of 0–100	ct_brain_conf_level	
	Epidural (EDH)	Integer number in the range of 0–100	ct_brain_edh	
	Subdural (SDH)	Integer number in the range of 0–100	ct_brain_sdh	
	Subarachnoid (SAH)	Integer number in the range of 0–100	ct_brain_sah	
	Intracerebral (intracerebral hemorrhage)	Integer number in the range of 0–100	ct_brain_ih	
	Hemorrhage volume in ml or cm <sup>3</sup>	Text	ct_brain_volume	

Automation of routine				ct_brain_sizes
measurements	Value of the transverse dislocation, if present (mm)	Integer number		ct_brain_sizes_disloc
(ventriculometry,	VCR 1	Integer number		ct_brain_sizes_vkk1
structures	VCR 2	Integer number		ct_brain_sizes_vkk2
measurement of the	VCR 3	Integer number		ct_brain_sizes_vkk3
craniovertebral				
junction)	Width of the 3 <sup>rd</sup> ventricle	Integer number		ct_brain_sizes_3ventr
Head CT				
				dx
Detection and	General probability of a finding in the study	Integer number in the range of 0–100		dx_conf_level
	Probability of a finding in the entire study. Pleural effusion	Integer number in the range of 0–100		dx_conf_level_pleural
	Probability of a finding in the entire study. Pneumothorax	Integer number in the range of 0–100		dx_conf_level_pneumothorax
localization of signs consistent with the	Probability of a finding in the entire study. Nodular opacity	Integer number in the range of 0–100	Focus/lesion	dx_conf_level_blackout
target pathology Chest X-ray/FLG	Probability of a finding in the entire study. Infiltration / consolidation	Integer number in the range of 0–100		dx_conf_level_infiltration
	Probability of a finding in the entire study. Dissemination	Integer number in the range of 0–100		dx_conf_level_dissemination
	Probability of a finding in the entire study. Cavity	Integer number in the range of 0–100		dx_conf_level_cavity
	Probability of a finding in the entire study. Atelectasis	Integer number in the range of 0–100		dx_conf_level_atelectasis

	Probability of a finding in the entire study. Calcification/calcified pulmonary nodule	Integer number in the range of 0–100	Optional for filling in	dx_conf_level_calcification
	Probability of a finding in the entire study. Mediastinum widening	Integer number in the range of 0–100	Including pulmonary hilar enlargement	dx_conf_level_dilatation
	Probability of a finding in the entire study. Cardiomegaly	Integer number in the range of 0–100		dx_conf_level_cardiomegaly
	Probability of a finding in the entire study. Cortical bone fracture	Integer number in the range of 0–100		dx_conf_level_cortical
	Probability of a finding in the entire study. Consolidated fracture	Integer number in the range of 0–100	Optional for filling in	dx_conf_level_fracture
				dx_arthrosis
Detection of	Probability of the presence of the indicated radiologic signs (at least one) in the study.	Integer number in the range of 0–100		dx_arthrosis_conf_level
	No arthrosis on the right	Integer number in the range of 0–100		dx_arthrosis_absence_right
	No arthrosis on the left	Integer number in the range of 0–100		dx_arthrosis_absence_left
radiologic signs (at least one) consistent with	arthrosis stage 1 on the right	Integer number in the range of 0–100		dx_arthrosis_stage1_right
arthrosis of the joints MSS XR	arthrosis stage 1 on the left	Integer number in the range of 0–100		dx_arthrosis_stage1_left
	arthrosis stage 2 on the right	Integer number in the range of 0–100		dx_arthrosis_stage2_right
	arthrosis stage 2 on the left	Integer number in the range of 0–100		dx_arthrosis_stage2_left
	arthrosis stage 3 on the right	Integer number in the range of 0–100		dx_arthrosis_stage3_right
	arthrosis stage 3 on the left	Integer number in the range of 0–100		dx_arthrosis_stage3_left

Detection of			dx_hip_arthrosis	
radiological signs (at least one) consistent	Probability of target pathology	Integer number in the range of 0–100	dx_hip_arthrosis_conf_level	
with deforming arthrosis of the hip	Value of the joint space on X-ray	Integer number	dx_hip_arthrosis_joint_space	
MSS VD	Probability of osteophytes	Integer number in the range of 0–100	dx_hip_osteophytes_conf_level	
WISS XX	Severity of the signs according to the classification (arthrosis stages 1-3)	Integer number	dx_hip_arthrosis_stage	
	Probability of aseptic necrosis	Integer number in the range of 0–100	dx_hip_necrosis_conf_level	
Detection of			dx_brachial_fracture	
radiological signs (at least one) consistent with the fracture of	Probability of the signs of target pathology	Integer number in the range of 0–100	dx_brachial_fracture_conf_level	
the shoulder joint bones	Level of diastasis of the bone fragments	Integer number	dx_brachial_diastasis	
MSS XR				
Detection of			dx_hip_fracture	
radiological signs (at least one) consistent with the fracture of	Probability of the signs of target pathology	Integer number in the range of 0–100	dx_hip_fracture_conf_level	
the hip joint bones	Level of diastasis of the bone fragments	Integer number	dx_hip_diastasis	
MSS XR				
Detection of			dx_ankle_fracture	
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radiological signs (at least one) consistent with the fracture of	Probability of the signs of target pathology	Integer number in the range of 0–100	dx_ankle_fracture_conf_level	
the ankle joint bones MSS XR	Level of diastasis of the bone fragments	Integer number	dx_ankle_diastasis	
			dx_sinusitis	
Detection of reduced	Probability of sinusitis in each sinus	Number	dx_sinusitis_conf_level	
pneumatization /	Localization of findings	Text	dx_sinusitis_localization	
paranasal sinuses Head XR	Calculating the opacified area as a percentage of the total area of the sinus (for each sinus with abnormal content)	Text	dx_sinusitis_area	
Detection of signs (at			dx_flat_foot	
least one) consistent with transverse flat	Probability of the signs of transverse flat foot, incl. its grade	Integer number in the range of 0–100	dx_flat_foot_conf_level	
foot	Longitudinal arch angle	Integer number	dx_flat_foot_angl	
1000	Longitudinal arch height	Integer number	dx_flat_foot_hight	
MSS XR	Probability of H.Valgus signs	Integer number in the range of 0–100	dx_flat_foot_valgus_conf_level	
	H.Valgus stage	Integer number	dx_flat_foot_valgus_stage	
	Intermetatarsal angle	Integer number	dx_flat_foot_intertarsal_angle	
	Angle of deviation of the big toe	Integer number	dx_flat_foot_1_angle	
Detection of signs (at			dx_fracture	
least one) consistent with bone fracture	Probability of the presence of X-ray signs (at least one) consistent with bone fracture	Integer number in the range of 0–100	dx_fracture_conf_level	
MSS XR	Level of diastasis of the bone fragments	Text	dx_fracture_diastasis	

			dx_flatfoot
	Probability of the presence of the indicated radiologic signs (at least one) consistent with the flat foot in the study.	Integer number in the range of 0–100	dx_flatfoot_conf_level
	Longitudinal arch angle, stage I–III on the right	Integer number	dx_flatfoot_arch_height_right
	Longitudinal arch angle, stage I–III on the left	Integer number	dx_flatfoot_arch_height_left
	Longitudinal arch height, stage I–III on the right	Integer number	dx_flatfoot_arch_angle_right
Detection of signs (at least one) consistent with the	Longitudinal arch height, stage I–III on the left	Integer number	dx_flatfoot_arch_angle_left
longitudinal flat foot in the lateral plane	No flat foot on the right	Integer number in the range of 0–100	dx_flatfoot_absence_right
MSS XR	No flat foot on the left	Integer number in the range of 0–100	dx_flatfoot_absence_left
	Flat foot grade 1 on the right	Integer number in the range of 0–100	dx_flatfoot_degree1_right
	Flat foot grade 1 on the left	Integer number in the range of 0–100	dx_flatfoot_degree1_left
	Flat foot grade 2 on the right	Integer number in the range of 0–100	dx_flatfoot_degree2_right
	Flat foot grade 2 on the left	Integer number in the range of 0–100	dx_flatfoot_degree2_left
	Flat foot grade 3 on the right	Integer number in the range of 0–100	dx_flatfoot_degree3_right
	Flat foot grade 3 on the left	Integer number in the range of 0–100	dx_flatfoot_degree3_left

Table 3.1	(continued)
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				dx comp fracture	
	Probability of at least one vertebra with over 25 % height loss	Integer number in the range of 0–100		dx_comp_fracture_conf_level	
	List of vertebrae numbers with over 25 % height loss, indicating the degree of compression as a fractional number rounded to two decimal places	Text	Example: (Th12:34,54 ; L2:56,23)	dx_comp_fracture_localization	ZZ: XXX
Detection of the signs of osteoporosis: detection and localization of compression vertebral	List of all vertebrae numbers excluding those mentioned above with over 25 % height loss and the radio density (HU) for Th11– L4 vertebrae	Text	Example: (Th11;87,45 ; L1:98,32; L3: 103.23)	dx_comp_fracture_localization1	
fractures with a degree of height loss of over 25% as well as the radio density measurements of	Separately – indicate a of the degree of hight loss for the vertebra with the highest degree of deformity	Text	Example (56,23)	dx_comp_fracture_degree	
vertebral bodies	Separately – indicate the mean density for Th11–L4	Text	Example (93,33)	dx_comp_fracture_average	
Spine XR	Indicate the mean density for L1– L4	Text	Example (10,77)	dx_comp_fracture_density	
	Where the AI service uses binary classification, it is possible to add more parameters, such as "probability of finding" calculated as a number in range between 0 to 1 that allow to detect the probability of compression fracture in a given patient with more accuracy	Text		dx_comp_fracture_other	

			dx_osteochondrosis	
Detection of signs consistent with osteochondrosis in the frontal and/or sagittal plane Spine XR	Probability of the X-ray signs consistent with osteochondrosis in the study	Integer number in the range of 0–100	dx_osteochondrosis_conf_level	
	<ul><li>A. 1. Disc height reduction (as compared to the above disc).</li><li>2. Spondylolisthesis.</li><li>3. Marginal osteophytes.</li><li>4. Subchondral osteosclerosis</li></ul>	Text	dx_osteochondrosis_type	
			dx_scoliosis	
	Probability of the X-ray sign A in the study	Integer number in the range of 0–100	dx_scoliosis_conf_level	
Detection of signs consistent with scoliosis in the frontal plane Spine XR	Grade I	Integer number in the range of 0–100	dx_scoliosis_degree1	
	Grade II	Integer number in the range of 0–100	dx_scoliosis_degree2	
	Grade III	Integer number in the range of 0–100	dx_scoliosis_degree3	
	Grade IV	Integer number in the range of 0–100	dx_scoliosis_degree4	
			dx_spondylolisthesis	
Detection of signs	Probability of the X-ray signs consistent with spondylolisthesis in the study	Integer number in the range of 0–100	dx_spondylolisthesis_conf_level	
consistent with spondylolisthesis in the	Grade I	Integer number in the range of 0–100	dx_spondylolisthesis_degree1	
sagittal plane	Grade II	Integer number in the range of 0–100	dx_spondylolisthesis_degree2	
Spine XR	Grade III	Integer number in the range of 0–100	dx_spondylolisthesis_degree3	
	Grade IV	Integer number in the range of 0–100	dx_spondylolisthesis_degree4	

Table 3.1	(continued)
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· · · · · · · · · · · · · · · · · · ·			mmg	
	Probability of breast cancer (C50) signs in the entire study	Integer number in the range of 0–100	mmg_conf_level	
	BI-RADS 0 (right)	Integer number in the range of 0–100	mmg_rads0_right	
	BI-RADS 1 (right)	Integer number in the range of 0–100	mmg_rads1_right	
	BI-RADS 2 (right)	Integer number in the range of 0–100	mmg_rads2_right	
	BI-RADS 3 (right)	Integer number in the range of 0–100	mmg_rads3_right	
	BI-RADS 4 (right)	Integer number in the range of 0–100	mmg_rads4_right	
Detection and localization of findings	BI-RADS 5 (right)	Integer number in the range of 0–100	mmg_rads5_right	
consistent with breast cancer MMG	BI-RADS 0 (left)	Integer number in the range of 0–100	mmg_rads0_left	
	BI-RADS 1 (left)	Integer number in the range of 0–100	mmg_rads1_left	
	BI-RADS 2 (left)	Integer number in the range of 0–100	mmg_rads2_left	
	BI-RADS 3 (left)	Integer number in the range of 0–100	mmg_rads3_left	
	BI-RADS 4 (left)	Integer number in the range of 0–100	mmg_rads4_left	
	BI-RADS 5 (left)	Integer number in the range of 0–100	mmg_rads5_left	
	PGMI (right)	Text	mmg_pgmi_right	
	PGMI (left)	Text	mmg_pgmi_left	
	ACR (right)	Text	mmg_acr_right	
	ACR (left)	Text	mmg_acr_left	

			mri_sclerosis
	Probability of multiple sclerosis	Integer number in the range of 0–100	mri_sclerosis_conf_level
Detection of multiple sclerosis	Total number of demyelination foci on non-contrast series	Text	mri_sclerosis_sum
Brain MRI	Number of contrast-enhanced foci	Text	mri_sclerosis_sum_contrast
	Volume of demyelination foci in each site (juxtacortical and subcortical, periventricular, infratentorial)	Text	mri_sclerosis_volume
			mri_brain
Detection and localization	Probability of the MRI sign in the entire study	Integer number in the range of 0–100	mri_brain_conf_level
	Number of the intracranial neoplasms on T2-WI	Text	mri_brain_sum
(extracerebral, intracerebral)	Number of the intracranial neoplasms on post-contrast T1- WI	Text	mri_brain_sum_contrast
Brain MRI	Size of each neoplasm along two axes on T2 FLAIR and post- contrast T1-WI	Text	mri_brain_size
	Volume of each neoplasm on T2 FLAIR and post-contrast T1-WI	Text	mri_brain_volume

Automation of routine				mri_brain_sizes	
measurements	Value of the transverse	Integer number		mri_brain_sizes_disloc	
(ventriculometry,	dislocation, if present (mm)				
displacement of median	VCR 1	Integer number		mri_brain_sizes_vkk1	
structures, measurement	VCR 2	Integer number		mri_brain_sizes_vkk2	
of the craniovertebral	VCR 3	Integer number		mri_brain_sizes_vkk3	
junction, changes in white	Width of the 3 <sup>rd</sup> ventricle	Integer number		mri_brain_sizes_3ventr	
matter, intracranial	displacement of the cerebellar	Integer number		mri_brain_sizes_tonsils_level	
measurements)	tonsils in relation to the foramen				
	magnum (mm)				
Brain MRI	downward displacement of the cerebellar tonsils	Integer number		mri_brain_sizes_tonsils_stage	
	White matter hyperintensities	Integer number		mri_brain_sizes_hyperintensity_st	
	(WMHs), grades	<b>.</b> .		age	
	Volume of WMH sites (total)	Integer number		mri_brain_sizes_hyperintensity_v ol	
	Intracranial volume	Integer number		mri_brain_sizes_intracranial_vol	
	Brain volume	Integer number		mri_brain_sizes_vol	
	Volume of intracranial cerebrospinal fluid	Integer number		mri_brain_sizes_liquor_vol	
<b>Detection of signs</b>				mri_vert_cr_nodule	
consistent with the focal	Signs of focal changes in MRI	Integer number in		mri_vert_cr_nodule_conf_level	
lesions in the cervical	appearance of the vertebrae	the range of 0–			
spinal cord		100			
Cervical spine MRI	Anteroposterior diameter of the focal changes in MRI appearance of the vertebrae	Integer number		mri_vert_cr_nodule_level_a	
	Transverse	Integer number		mri_vert_cr_nodule_level_b	
	Vertical	Integer number		mri_vert_cr_nodule_level_c	
	presence/absence of contrast fluid	Integer number	0 or 1	mri_vert_cr_contrast	

Detection and localization				mri_vert_cr_stenosis	
of MRI signs (at least one) consistent with degenerative changes in	Probability of the MRI sign in the entire study	Integer number in the range of 0– 100		mri_vert_cr_stenosis_conf_level	
the cervical discs on sagittal and axial T2-WI	Anteroposterior diameter of the protruded discs in sagittal planes (mm)	Integer number		mri_vert_cr_stenosis_level	
Cervical spine MRI	Dural sac measurements	Integer number		mri_vert_cr_dural_sac_level	
Detection and localization				mri_discs_damage	
of MRI signs (at least one) consistent with degenerative changes in	Probability of the MRI sign in the entire study	Integer number in the range of 0– 100		mri_discs_damage_conf_level	
the thoracic discs on sagittal and axial T2-WI	Anteroposterior diameter of the protruded discs in sagittal planes (mm)	Integer number		mri_discs_damage_level	
Thoracic spine MRI	Dural sac measurements	Integer number		mri_discs_dural_sac_level	
				mri_vert_br_nodule	
Detection of signs	Signs of focal changes in MRI appearance of the vertebrae	Integer number in the range of 0– 100		mri_vert_br_nodule_conf_level	
consistent with the focal lesions in the thoracic spinal cord	Anteroposterior diameter of the focal changes in MRI appearance of the vertebrae	Integer number		mri_vert_br_nodule_level_a	
	Transverse	Integer number		mri_vert_br_nodule_level_b	
I noracic spine MRI	Vertical	Integer number		mri_vert_br_nodule_level_c	
	presence/absence of contrast fluid	Integer number	0 or 1	mri_vert_br_contrast	

			mri_spine	
	Probability of the MRI signs consistent with degenerative changes in the lumbosacral discs in the entire study	Integer number in the range of 0– 100	mri_spine_conf_level	
Detection and localization of MRI signs (at least one) consistent with degenerative changes in the lumbosacral discs on sagittal and axial T2-WI Lumbosacral spine MRI	Anteroposterior diameter of the protruded discs in sagittal planes (mm)	Text	mri_spine_disk	
	Anteroposterior diameter of the dural sac in axial planes	Text	mri_spine_canal_size_axial	
	Frontal diameter of the dural sac in axial planes	Text	mri_spine_canal_size_front	
	Anteroposterior diameter of the dural sac in sagittal planes	Text	mri_spine_canal_size_sagittal	
	Area of the subdural cavity at the disc level in axial planes	Text	mri_spine_canal_area	

				mri_vert_ls_nodule	
Detection of signs	Signs of focal changes in MRI appearance of the vertebrae	Integer number in the range of 0– 100		mri_vert_ls_nodule_conf_level	
consistent with the focal lesions in the lumbosacral spinal cord	Anteroposterior diameter of the focal changes in MRI appearance of the vertebrae	Integer number		mri_vert_ls_nodule_level_a	
	Transverse	Integer number		mri_vert_ls_nodule_level_b	
Lumbosacral spine MRI	Vertical	Integer number		mri_vert_ls_nodule_level_c	
	presence/absence of contrast fluid	Integer number	0 or 1	mri_vert_ls_contrast	
Detecting signs consistent				mri_knee_joint_chondromalacia	
with the areas of cartilage breakdown	Probability of chondromalacia in the study.	Integer number in the range of 0– 100		mri_knee_joint_chondromalacia_conf_ level	
(cnondromalacia) along	Depth of the cartilage defect	Integer number		mri_knee_joint_chondromalacia_depth	
the knee and the	Two linear dimensions of the cartilage defect (1)	Integer number		mri_knee_joint_chondromalacia_level _1	
	Two linear dimensions of the cartilage defect (2)	Integer number		mri_knee_joint_chondromalacia_level _2	
Knee joint MRI	Chondromalacia grading	Integer number		mri_knee_joint_chondromalacia_stage	
Automated routine				mri_prostate	
measurements of the	Sagittal (anteroposterior)	Integer number		mri_prostate_level_1	
prostate gland	Frontal (transverse)	Integer number		mri_prostate_level_2	
(dimensions)	Vertical (longitudal)	Integer number		mri_prostate_level_3	
Lesser pelvis MRI	Volume, cm <sup>3</sup>	Integer number		mri_prostate_vol	

Table 3.1	(continued)
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			mri_uterus
	Uterus position version and flexion	Text	mri_uterus_position
	Linear dimensions of corpus and cervix (longitudal, transverse and vertical / anteroposterior)	Text	mri_uterus_level
Automated routine measurements of the uterus (corpus and cervix:	Endometrium: thickness, signal homogeneity, regularity of the endometrial border, presence of inclusions and artefacts, signal intensity	Text	mri_uterus_endometrium_level
position, dimensions, displacements)	Junctional area: thickness, contours, homogeneity and intensity of the signal, inclusions	Text	mri_uterus_tz_level
Lesser peivis MRI	Myometrium: thickness, contours, homogeneity and intensity of the signal, inclusions	Text	mri_uterus_myometrium_level
	Absent uterus: message about the absence of the target organ	Text	mri_uterus_present
	Ovaries: length, width and height (mm), inclusions and their MRI appearance	Text	mri_ovaries_level
* Fields displaying the degree (example: CT2 – 100) probab	e of damage may provide continu ility distribution (the latter may	nous (example: CT0 – 10, CT apply if the AI service is capa	1 - 20, CT2 - 60, CT3 - 7, CT4 - 3) or discrete able of definitively identifying the degree of damage).

## AI SERVICE MESSAGE FORMAT IN THE DICOMREPORTNOTIFY TOPIC

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       "dx_flat_foot_hight": "<number>"
       "dx_flat_foot_valgus_conf_level": "<number>",
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},
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},
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},
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       "mri_prostate_level_3": "<number>",
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}
```

}

}

}

## AI SERVICE MESSAGE FORMAT IN THE PUMCONSUMERERROR TOPIC

```
{
    "studyIUID": "1.2.40.0.13.1.1.10.89.12.24.20160326025655364.35855",
    "aiResult": {
        "modeIId": 1000,
        "error": "case of error",
        "description": "description error",
        "dateTimeParams": {
            "downloadStartDT": "<dateTime>",
            "downloadEndDT": "<dateTime>",
            "downloadEndDT": "<dateTime>",
            }
        }
    }
}
```

## Appendix 6

## AI SERVICE MESSAGE FORMAT FOR THE ORIGINALDICOMSENDERNOTIFY TOPIC

```
{
    "studyIUID":"1.2.40.0.13.1.1.1.10.89.12.24.20160326025655364.35855",
    "modelId":1000,
    "studyDate":"2020-04-02T18:30:17 03:00",
    "researchParams":{
        "modalityTypeCode":"CT",
        "anatomicalAreasCode":["CHEST"],
        "ageGroup":"ADULT"
    }
}
```

## **REQUIREMENTS FOR FILLING OUT DICOM TAGS**

The number of characters in the tags (0020,000E) and (0008,0018) must not exceed 64. If the OriginalSeriesUID length exceeds 56 characters, it must be shortened to 56 characters and ended with a suffix using a mask from the table below.

Key	Key description	DICOM Tag	Tag description
Series number	Series mask {OriginalSeriesUID}.{modelId}.{addId}	0020,000E	Series Instance UID
Inventory number	The value is taken from the original study	0008.0050	Accession Number
Patient number	The value is taken from the original study	0010.0020	Patient ID
Issuer of Patient ID	The value is taken from the original study	0010.0021	Issuer of Patient ID
Sequence number	The value is taken from the original study	0040.2017	Filler Order Number / Imaging Service Request
Series name	Contains the name of AI service. Should match the service name in DICOM SR.	0008,103E	Series Description
Modality	Corresponds to the original study modality	0008.0060	Modality
Service name		0008.0080	Institution Name
Software version		0008.1040	Institutional Department Name
Date of test		0008.0022	Acquisition Date
Time of test		0008.0032	Acquisition Time
Probability of a finding in the study		0008.1070	Operators' Name

## Table 7.1 – Requirements for filling out DICOM tags

## TAGS TO SYNCHRONIZE CT, LDCT AND MRI SERIES

DICOM Tag	Tag description	Example
0018,0050	Slice Thickness	5
0018,5100	Patient Position	HFS
0020,1041	Slice Location	+11.00
0020,0020	Patient Orientation	L\P
0020,0032	Image Position (Patient)	<-255.361\-313.9553\-824.60>
0020,0037	Image Orientation (Patient)	<1\0\0\0\1\0>
0020,0052	Frame of Reference UID	1.2.392.123.123.11
0020,0013	Instance Number	1
0028,0030	Pixel Spacing	<0.995\0.995>

# **REQUIREMENTS FOR THE CONTENT OF THE "REPORT" SECTION OF DICOM SR** Table 8.1 – Requirements for the content of the "Report" section of DICOM SR

Modality	Target pathology	Report must contain	
	COVID-19	<ul> <li>Percentage of lung tissue involvement for each lung ("Pulmonary parenchy involvement:% of the right lung,% of the left lung").</li> </ul>	ymal
	Change in lung airness	<ul> <li>Site localization by side (left or right) and lobe</li> </ul>	
	Malignant neoplasms of the lungs	<ul> <li>mean size (mm) of each nodule (through to 4 nodules; in presence of ≥ 5 node whose mean diameter is ≥ 6 mm the largest one must be measured);</li> <li>volume of each nodule (through to 4 nodules; in presence of ≥ 5 nodules whose m diameter is ≥ 6 mm the largest one must be measured);</li> </ul>	lules nean
	Malignant neoplasms of the lungs according to LDCT	<ul> <li>volume (mm<sup>3</sup>) of each pulmonary nodule;</li> <li>mean size (mm) of each pulmonary nodule;</li> <li>classification of the pulmonary nodules using Lung-RADS (v.1.1)</li> </ul>	
Chest CT	Dilation of ascending and descending thoracic aorta	<ul> <li>largest diameter of the ascending aorta, mm;</li> <li>largest diameter of the descending aorta, mm;</li> <li>(optional) calcifications in the aorta walls</li> </ul>	
	Dilation of the pulmonary trunk and measurement of the pulmonary trunk diameter	<ul> <li>largest diameter of the pulmonary trunk, mm</li> </ul>	
	Ischaemic heart disease (Coronary calcium)	<ul> <li>Agatston score</li> <li>CAC-DRS category depending on the severity of the calcification</li> </ul>	
	Ischemic heart disease (paracardial fat)	<ul> <li>Paracardial fat volume, ml</li> <li>Mean paracardial fat density, HU</li> </ul>	
	Pulmonary emphysema	<ul> <li>Numerical value of the percent emphysema in both lungs and each lung separatel</li> <li>Localization of findings</li> </ul>	ly;
	Free pleural fluid (effusion)	<ul> <li>Volume of pleural effusion in ml or cm<sup>3</sup> for each lung</li> <li>Mean effusion density in HU for each lung</li> </ul>	

Modality	Target pathology	Report must contain
	Enlarged intrathoracic lymph nodes (lymphadenopathy)	<ul> <li>Size of the largest lymph node, mm</li> <li>(Optional) Calcified intrathoracic lymph nodes</li> <li>(Optional) Classification of lymph nodes as per IASLC</li> </ul>
	Pulmonary tuberculosis	<ul> <li>Localization of findings</li> </ul>
	Sarcoidosis	<ul> <li>Localization of findings</li> <li>Classification of the detected changes by the disease stage</li> </ul>
	Bronchiectatic disease	– Broncho-arterial ratio
	Compression fracture of vertebral bodies	<ul> <li>Localization of vertebrae with a degree of vertebral compression deformity (the ratio of the lowest height of the vertebral body in the anterior, middle or posterior part to the greatest height of another part of the vertebral body) over 25% ("Measurement of the loss of vertebral body(ies) height: 'vertebra number' – 'compression degree, %'")</li> <li>(optional) measurement of the bone mineral density (mg/mL) or radio density (HU) of the cancellous bone of Th12–L3 vertebral bodies indicating the vertebra number ("Measurement of the reduction in the cancellous bone density of the vertebral body(ies): 'vertebra number' – 'radio density, HU'")*</li> <li>(optional) suspected osteoporosis as per the ACR 2018, ISCD 2019 criteria</li> <li>(optional) differential diagnostics of the compression fractures and wedge deformities of the vertebral bodies.</li> <li>* Bone mineral density or radio density are not measured for vertebrae with height loss greater than 25%.</li> </ul>
	Focal lesions in the vertebrae	<ul> <li>Localisation of the focal lesion indicating the bone name</li> <li>Mean density of the focal lesion</li> <li>Linear dimensions of the focal lesion (long and perpendicular short axes), mm</li> <li>(Optional) vertical size of the focal lesion the size of &gt; 10 mm, mm</li> </ul>
	Rib/s fracture	<ul> <li>Localization of the fracture site (rib number, a side – left/right, a third – anterior/lateral/posterior)</li> <li>Degree of diastasis</li> </ul>

Modality	Target pathology	Report must contain
	Urolithiasis	<ul> <li>Numerical value of the size of the calculus / the largest calculus in axial plane for each organ of the urinary system (maximum and perpendicular short axis), mm;</li> <li>Mean density of the calculus / the largest calculus in axial plane for each organ of the urinary system, HU;</li> <li>(Optional) numerical value of the vertical size of the calculus in sagittal or coronal planes</li> </ul>
Abdominal CT	Liver lesions	<ul> <li>Localization of the lesions by liver lobe (right or left)</li> <li>Lesion density in HU (for lesions of ≥ 5 mm): minimum, maximum;</li> <li>Diameter of the lesion whose size ranges between 5 to 10 mm; linear dimensions in mm (long and perpendicular short axis) of the lesions &gt; 10 mm in size</li> <li>Mean liver density, HU</li> <li>Vertical linear size of the lesion, mm</li> </ul>
	Renal lesions	<ul> <li>Localization of the lesions by organ (right or left kidney)</li> <li>Lesion density in HU (for lesions of ≥ 5 mm): minimum, maximum;</li> <li>Diameter of the lesion whose size ranges between 5 to 10 mm; linear dimensions in mm (long and perpendicular short axis) of the lesions &gt; 10 mm in size</li> <li>(optional) vertical linear size of the lesion, mm</li> </ul>
	Adrenal gland lesions	<ul> <li>Axial size of the largest adrenal gland lesion (if any) along the short axis, mm</li> <li>(optional) thickness of adrenal body and limbs, mm</li> </ul>
	Dilated abdominal aorta	<ul> <li>Largest diameter of the abdominal aorta, mm</li> <li>(optional) calcifications in the aorta walls</li> </ul>

Modality	Target pathology	Report must contain
	Compression fracture of vertebral bodies	<ul> <li>Localization of vertebrae with a degree of vertebral compression deformity (the ratio of the lowest height of the vertebral body in the anterior, middle or posterior part to the greatest height of another part of the vertebral body) over 25% ("Measurement of the loss of vertebral body(ies) height: 'vertebra number' – 'compression degree, %'")</li> <li>(optional) measurement of the bone mineral density (mg/mL) or radio density (HU) of the cancellous bone of Th12–L3 vertebral bodies indicating the vertebra number ("Measurement of the reduction in the cancellous bone density of the vertebral body(ies): 'vertebra number' – 'radio density, HU''')*</li> <li>(optional) suspected osteoporosis as per the ACR 2018, ISCD 2019 criteria</li> <li>(optional) differential diagnostics of the compression fractures and wedge deformities of the vertebral bodies.</li> <li>* Bone mineral density or radio density are not measured for vertebrae with height loss greater than</li> </ul>
		25%.
	Gallbladder stones	<ul> <li>Integer number for the largest stone diameter, mm</li> <li>Number of stones</li> </ul>
	Routine liver measurements	<ul> <li>Vertical anteroposterior and transverse dimensions of the right liver lobe, mm</li> <li>Mean density of the liver parenchyma, HU</li> <li>Maximum diameter of the common bile duct, mm</li> <li>Portal vein diameter, mm</li> </ul>
	Routine kidney measurements	<ul> <li>Position of the vertebral body in relation to the upper edge of each kidney</li> <li>Length, width and thickness of each kidney, mm</li> <li>The largest dimensions of each renal pelvis in the axial plane, mm (the longest perpendicular to the long axis of the ureteropelvic junction. In presence of a parapelvic cyst, this measurement is not performed, and the AI service provides the following response: "A parapelvic cyst was detected, measuring the renal pelvis on native images is not feasible").</li> <li>Smallest thickness of kidney parenchyma</li> </ul>
	Routine measurements of spleen and	– Length, width and height of the spleen
	pancreas	<ul> <li>Transverse dimensions of the head, body and tail of the pancreas</li> </ul>

Modality	Target pathology	Report must contain
	Focal lesions in the vertebrae	<ul> <li>Localisation of the focal lesion indicating the bone name</li> <li>Mean density of the focal lesion</li> <li>Linear dimensions of the focal lesion (long and perpendicular short axes), mm</li> <li>(Optional) vertical size of the focal lesion the size of &gt; 10 mm, mm</li> </ul>
Head CT	Intracranial hemorrhage	<ul> <li>Type of hemorrhage ("Type of hemorrhage –", epidural, subdural, subarachnoid, or intracerebral);</li> <li>Hemorrhage volume in ml or cm<sup>3</sup></li> <li>(optional) detection of skull fractures</li> </ul>
	Ishemic stroke	<ul> <li>Detection of acute Ishemic stroke areas</li> <li>indicating a basin of acute ischemic stroke (ACA, MCA, PCA, VBB).</li> <li>ASPECTS score (in case if middle cerebral artery (MCA) is affected);</li> <li>(optional) post-stroke changes and vascular lesions (location and volume)</li> </ul>
	Routine measurements	<ul> <li>Distance of the transverse dislocation (mm)</li> <li>VCR 1, VCR 2, VCR 3, width of the 3<sup>rd</sup> ventricle, mm</li> <li>Downward displacement of the cerebellar tonsils in relation to the foramen magnum, mm</li> <li>Degree of downward displacement of the cerebellar tonsils</li> </ul>
Head XR	Sinusitis	<ul> <li>Localization of findings</li> <li>Calculating the opacified area as a percentage of the total area of the sinus</li> <li>Presence of defects in the sinus walls</li> </ul>

Modality	Target pathology	Report must contain
FLG	Various lung pathologies pleural effusion, pneumothorax, focal opacity, infiltration/consolidation, dissemination, cavity, atelectasis, calcification/calcified pulmonary nodule, mediastinal widening, cardiomegaly, cortical bone fracture, consolidated fracture	<ul> <li>Probability of each radiologic sign</li> <li>Localisation and definitive identification of all findings</li> <li>text description of pathologies from the "Target Pathology" list. If pathology is absent, the field has to contain a text description of the "norm".</li> <li>text description of the pleural sinuses;</li> <li>text description of the pulmonary pattern;</li> <li>text description of aorta;</li> <li>text description of diaphragm.</li> </ul>
	Pulmonary tuberculosis	<ul> <li>type (lesion, calcification, dissemination, miliary lesions, round mass, cavity in the lung) and localization of pathological findings (side, lobe plane), digital identification, number (single, multiple)</li> <li>presence of the condition in the entire study (differential diagnosis) semiotics</li> </ul>
	conditions	<ul> <li>localization of pathological findings (side, lobe plane)</li> </ul>
Chest XR	Hydrothorax	<ul> <li>presence of the condition in the entire study (differential diagnosis) semiotics</li> <li>localization of pathological findings (side)</li> <li>level (number of the highest rib on the posterior segment of which the fluid level is projected), optional)</li> </ul>
	Pneumothorax	<ul> <li>presence of the condition in the entire study, semiotics (for example, "collection of air is observed")</li> <li>localization of pathological findings (side)</li> </ul>
	Atelectasis	<ul> <li>presence of the condition in the entire study (differential diagnosis) semiotics</li> <li>localization of pathological findings (side, lobe plane)</li> </ul>
	Pulmonary masses	– Type and localization of pathological findings (side, lobe plane)
	Cardiomegaly	<ul> <li>presence of the condition in the entire study, semiotics</li> <li>Cardiothoracic ratio (0-1)</li> </ul>

Modality	Target pathology	Report must contain
	Mediastinal disease	<ul> <li>presence of the condition in the entire study (differential diagnosis)</li> <li>type (pneumomediastinum, widening) and localization of pathological findings (part of the mediastinum)</li> </ul>
	Rib/s fracture	<ul> <li>presence of the condition in the entire study, disease-specific terms</li> <li>localization of pathological findings (side, rib number)</li> <li>displacement (optional)</li> </ul>
	Arthrosis	<ul> <li>localisation of the signs in the entire study</li> <li>grading the abnormal findings (arthrosis stages 1-3)</li> </ul>
	Fracture	<ul> <li>localisation of the findings</li> <li>(optional) quantitative estimation of the bone fragment diastasis</li> </ul>
	Longitudinal flat foot	<ul> <li>foot height, indicating foot side, if possible ("Longitudinal arch height – _ mm");</li> <li>angle of the longitudinal arch, indicating foot side, if possible ("Longitudinal arch angle – _ deg.");</li> </ul>
	Transverse flat foot	– Intermetatarsal angle, angle of deviation of the big toe, flat foot stage
	Fracture of vertebral bodies	<ul> <li>Listing the localizations of all vertebrae with height loss over 25%</li> <li>(optional) indicate the degree of height loss</li> </ul>
MSS XR	Osteochondrosis	<ul> <li>Localisation of the findings</li> <li>List of findings</li> </ul>
	Scoliosis	<ul> <li>localisation of the findings</li> <li>deformity angles of the spinal axis (absolute values and/or scoliosis grade);</li> <li>direction of the scoliosis curve;</li> <li>in case of two oppositely directed C-shaped scoliosis - the conclusion must contain the following phrase "S-scoliosis and the measurement of angular deformity to the right and to the left"</li> </ul>
	Spondylolisthesis	<ul> <li>localisation of the findings</li> <li>direction of displacement;</li> <li>vertebral displacement degree (absolute values and/or degree of displacement)</li> </ul>

Modality	Target pathology	Report must contain
MMG	breast cancer	<ul> <li>ACR tissue density (each breast)</li> <li>Presence of calcifications</li> <li>Type of calcifications (benign/suspicious)</li> <li>Distribution of calcifications</li> <li>(optional) localization of calcifications</li> <li>presence of lesions</li> <li>localization of lesions (quadrant)</li> <li>disruption of tissue architecture</li> <li>localization of disrupted tissue architecture (quadrant)</li> <li>presence of abnormal axillary lymph nodes</li> </ul>
Brain MRI	Intracranial neoplasms	<ul> <li>number of findings</li> <li>Localization of findings with regard to the brain structures ("extracerebral", "intracranial")</li> <li>Localization of findings with regard to the brain lobe (for intracranial) / region (for extracerebral) – frontal, temporal, parietal, occipital;</li> <li>volume of each finding on T2 FLAIR and post-contrast T1;</li> <li>linear dimensions of each finding along two axes on T2 FLAIR and post-contrast T1;</li> <li>(optional) for each finding – changes in lesion sizes over time compared with the previous MRI (if available) on T2 FLAIR and post-contrast T1</li> </ul>
	Multiple sclerosis	<ul> <li>distinguishing the demyelination foci in each affected region using a color scheme: juxta- and subcortical, periventricular, infratentorial</li> <li>number of foci in total and in each affected region;</li> <li>number of contrast-enhanced foci (if there are series with contrast enhancement);</li> <li>(optional) present the following information as a spreadsheet/color diagram:</li> <li>1) total volume of demyelination foci, cm<sup>3</sup>;</li> <li>volume of demyelination foci by affected regions, cm<sup>3</sup>;</li> <li>volume of contrast-enhanced foci</li> </ul>

Modality	Target pathology	Report must contain
	Routine measurements	<ul> <li>displacement of the cerebellar tonsils in relation to the foramen magnum (mm)</li> <li>Degree of downward displacement of the cerebellar tonsils (number 0–3)</li> <li>VCR 1, VCR 2, VCR 3, width of the 3<sup>rd</sup> ventricle, mm</li> <li>Value of the transverse dislocation, if present (mm)</li> <li>White matter hyperintensities (WMHs), grades</li> <li>Volume of WMH sites (total)</li> <li>Volumes of brain and intracranial cerebrospinal fluid</li> <li>(optional) segmentation of the white and grey matters</li> </ul>
Cervical spine MRI	Protrusions and hernias, spinal stenosis	<ul> <li>Localizion of dorsal disc protrusions ("Dorsal disc protrusion", C4-C5, C5-C6, etc.);</li> <li>Anteroposterior diameter of the protruded discs in sagittal planes ("Size mm");</li> <li>anteroposterior and frontal areas of the dural sac in axial planes; anteroposterior area of the dural canal in sagittal planes ("Dural sac area in axial planesx_ mm, and in sagittal planes mm");</li> <li>Area of the subdural cavity at the disc level ("Area of the subdural cavity mm<sup>2</sup> at", C4-C5, C5-C6, etc.)</li> </ul>
	Focal lesions in the bone	<ul> <li>Localisation of the focal lesion indicating the vertebra name</li> <li>Anteoposterior, transverse and vertical diameters of vertebral body lesions, mm</li> <li>Presence/absence of contrast fluid in the focal lesions (where post-contrast series are available)</li> </ul>
Thoracic spine MRI	Protrusions and hernias, spinal stenosis	<ul> <li>Localization of dorsal disc protrusions ("Dorsal disc protrusion", Th1-Th2, Th2-Th3, etc.);</li> <li>Anteroposterior diameter of the protruded discs in sagittal planes ("Size mm");</li> <li>anteroposterior and frontal areas of the dural sac in axial planes; anteroposterior area of the dural canal in sagittal planes ("Dural sac area in axial planes mm, and in sagittal planes mm");</li> <li>Area of the subdural cavity at the disc level ("Area of the subdural cavity mm<sup>2</sup> at", Th1-Th2, Th2-Th3, etc.)</li> </ul>
	Focal lesions in the bone	<ul> <li>Localisation of the focal lesion indicating the vertebra name</li> <li>Anteoposterior, transverse and vertical diameters of vertebral body lesions, mm</li> <li>Presence/absence of contrast fluid in the focal lesions (where post-contrast series are available)</li> </ul>

Modality	Target pathology	Report must contain
Lumbosacral spine MRI	Protrusions and hernias, spinal stenosis	<ul> <li>Localization of dorsal disc protrusions ("Dorsal disc protrusion", L1–L2, L2–L3, etc.);</li> <li>Anteroposterior diameter of the protruded discs in sagittal planes ("Size – mm");</li> <li>anteroposterior and frontal areas of the dural sac in axial planes; anteroposterior area of the dural canal in sagittal planes ("Dural sac area in axial planes mm, and in sagittal planes – mm");</li> <li>Area of the subdural cavity at the disc level ("Area of the subdural cavity – mm<sup>2</sup> at", L1–L2, L2–L3, etc.)</li> </ul>
	Focal lesions in the bone	<ul> <li>Localisation of the focal lesion indicating the vertebra name</li> <li>Anteoposterior, transverse and vertical diameters of vertebral body lesions, mm</li> <li>Presence/absence of contrast fluid in the focal lesions (where post-contrast series are available)</li> </ul>
Knee joint MRI	Chondromalacia	<ul> <li>Depth of the cartilage defect</li> <li>Two linear dimensions of the cartilage defect</li> <li>Chondromalacia grading</li> </ul>
Lesser pelvis MRI	Routine measurements of the uterus	<ul> <li>Uterus position version and flexion</li> <li>Location of the uterus (lateroversion)</li> <li>Linear dimensions of corpus and cervix (longitudal, transverse and vertical / anteroposterior)</li> <li>Endometrial thickness</li> <li>Thickness of the junctional area</li> <li>Myometrial thickness</li> <li>Absent uterus: message about the absence of the target organ</li> <li>(optional) ovaries: length, width and height, mm</li> </ul>
Lesser pelvis MRI	Routine measurements of the prostate gland	<ul> <li>Dimensions of the prostate gland: sagittal (anteroposterior), frontal (transverse), vertical (longitudinal), mm</li> <li>Volume of the prostate gland, cm<sup>3</sup></li> </ul>

## **REQUIREMENTS FOR THE CONTENT OF THE "CONCLUSION" SECTION OF DICOM SR**

Modality	Target pathology	Conclusion must contain
	COVID	<ul> <li>Percentage of lung tissue involvement for each lung ("Pulmonary parenchymal involvement:% of the right lung,% of the left lung");</li> <li>grading pathological changes according to the CT 0-4 classification ("Severity: CT", 1 - percentage of pulmonary involvement for either lung: 0 - 25 %, 2 - 25-50 %, 3 - 50-75 %, 4 - 75-100 % - based on the largest value).</li> </ul>
	Change in lung airness	<ul> <li>Site localization by side (left or right) and lobe</li> </ul>
	Malignant neoplasms of the lungs	- volume (mm <sup>3</sup> ) and mean size (mm) for each malignant nodule
	Malignant neoplasms of the	- volume (mm <sup>3</sup> ) and mean size (mm) for each pulmonary nodule;
Chest CT	lungs according to LDCT	<ul> <li>classification of the pulmonary nodules using Lung-RADS (v.1.1)</li> </ul>
	Dilation of ascending and descending thoracic aorta	<ul> <li>the largest diameter of the ascending and descending aortas along a short axis ("Ascending aorta – mm, descending aorta – mm");</li> <li>notification about the ascending aorta dilation (diameter between 40 and 49 mm inclusive), if present</li> <li>(optional) calcifications in the aorta walls</li> </ul>
	Dilation of the pulmonary trunk	<ul> <li>Largest diameter of the pulmonary trunk along the short axis, mm</li> </ul>
	Ischaemic heart disease (Coronary calcium)	<ul> <li>Agatston score</li> <li>score depending on the intensity of coronary calcium (CAC-DRS 0, CAC-DRS 1, CAC-DRS 2, CAC-DRS 3)</li> </ul>
	Ischemic heart disease	– Paracardial fat volume, ml
	(paracardial fat)	<ul> <li>(optional) mean paracardial fat density, HU</li> </ul>
	Pulmonary emphysema	<ul> <li>percent emphysema in both lungs and separately for each lung ("left lung:%", "right lung: %", "total: %")</li> </ul>

Table 9.1 – Requirements for the content of the "Conclusion" section of DICOM SR

Modality	Target pathology	Conclusion must contain
	Free pleural fluid (effusion)	<ul> <li>effusion volume in ml for each lung ("left lung:ml", "right lung:ml");</li> <li>mean effusion density in HU for each lung ("left lung:HU", "right lung:HU");</li> </ul>
	Enlarged intrathoracic lymph nodes (lymphadenopathy)	<ul> <li>Size of the largest lymph node along a short axis, mm</li> <li>(optional) calcified intrathoracic lymph nodes ("Calcified nodes are present" / "Calcified nodes are absent")</li> <li>(optional) classification of lymph nodes as per IASLC</li> </ul>
	Pulmonary tuberculosis	<ul> <li>localisation of the findings</li> </ul>
	Sarcoidosis	<ul> <li>Localization of findings</li> <li>Disease stage</li> </ul>
	Bronchiectatic disease	– Broncho-arterial ratio
	Compression fracture of vertebral bodies	<ul> <li>degree of compression deformity of the vertebral body as per Genant classification for the most deformed vertebra (Genant 2 = 25-39%, Genant 3 = ≥40%);</li> <li>(optional) signs of osteoporosis based on the mineral density of the Th12-L3* vertebral bodies;</li> <li>(optional) differential diagnostics of the compression fractures and wedge deformities of the vertebral bodies;</li> <li>(optional) indication of suspected osteoporosis as per the ACR 2018, ISCD 2019 criteria * Bone mineral density (or HU) is not measured for vertebrae with height loss greater than 25%.</li> </ul>
	Focal lesions in the vertebrae	<ul> <li>Localisation of the focal lesion indicating the bone name</li> <li>Mean density of the focal lesion</li> <li>Linear dimensions of the focal lesion (long and perpendicular short axes), mm</li> <li>(Optional) vertical size of the focal lesion the size of &gt; 10 mm, mm</li> </ul>
	Rib/s fracture	<ul> <li>Localization of the fracture site (rib number, a side – left/right, a third – anterior/lateral/posterior)</li> </ul>
Abdominal CT	Gallbladder stones	<ul> <li>Integer number for the largest stone diameter, mm</li> <li>Number of stones</li> </ul>
	Routine liver measurements	<ul> <li>Vertical anteroposterior and transverse dimensions of the right liver lobe, mm</li> <li>Mean density of the liver parenchyma, HU</li> <li>Maximum diameter of the common bile duct, mm</li> <li>Portal vein diameter, mm</li> </ul>
Modality	Target pathology	Conclusion must contain
----------	-----------------------------	--
	Routine kidney measurements	<ul> <li>Position of the vertebral body in relation to the upper edge of each kidney</li> <li>Length, width and thickness of each kidney, mm</li> <li>The largest dimensions of each renal pelvis in the axial plane, mm (the longest perpendicular to the long axis of the ureteropelvic junction. In presence of a parapelvic cyst, this measurement is not performed, and the AI service provides the following response: "A parapelvic cyst was detected, measuring the renal pelvis on native images is not feasible").</li> <li>Smallest thickness of kidney parenchyma</li> </ul>
	Routine measurements of	- Length, width and height of the spleen
	spleen and pancreas	- Transverse dimensions of the head, body and tail of the pancreas
	Urolithiasis	<ul> <li>size of the calculus / the largest calculus in axial plane for each organ of the urinary system ("long axis_mm", "short axis_mm")</li> <li>mean density of the calculus / the largest calculus in axial plane for each organ of the urinary system, HU;</li> <li>(optional) vertical linear size of the calculus / the largest calculus in axial plane for each organ of the urinary system, mm</li> </ul>
	Liver lesions	<ul> <li>diameter of the lesion whose size ranges between 5 to 10 mm; linear dimensions in mm (long and perpendicular short axis) of the lesions &gt; 10 mm in size</li> <li>(for the lesions ≥5mm in size) minimum and maximum density of lesions in HU ("minimum lesion densityHU", "maximum lesion densityHU");</li> <li>localization of each lesion, by liver lobe ("right lobe"/"left lobe");</li> <li>mean liver density, HU</li> <li>(optional) vertical linear size of the lesion, mm</li> </ul>
	Renal lesions	<ul> <li>diameter of the lesion whose size ranges between 5 to 10 mm; linear dimensions in mm (long and perpendicular short axis) of the lesions &gt; 10 mm in size</li> <li>(for the lesions ≥5mm in size) minimum and maximum density of lesions in HU ("minimum lesion densityHU", "maximum lesion densityHU");</li> <li>localization of each lesion, by organ ("right kidney"/"left kidney");</li> <li>(optional) vertical linear size of the lesion, mm – for each kidney</li> </ul>
	Adrenal gland lesions	<ul> <li>Size of the largest lesion along a short axis, mm</li> <li>(optional) thickness of adrenal body and limbs, mm ("bodymm", "lateral limbmm", "medial limbmm") – for each adrenal gland</li> </ul>

Modality	Target pathology	Conclusion must contain		
	Dilated abdominal aorta	<ul> <li>Largest diameter of the abdominal aorta along a short axis, mm</li> <li>notification about the abdominal aorta dilation (diameter between 25 and 49 mm inclusive), if present</li> <li>(optional) calcified abdominal aorta walls ("Calcifications are present" / "Calcifications nodes are absent")</li> </ul>		
	Compression fracture of vertebral bodies	<ul> <li>degree of compression deformity of the vertebral body as per Genant classification for the most deformed vertebra (Genant 2 = 25-39%, Genant 3 = ≥40%);</li> <li>(optional) signs of osteoporosis based on the mineral density of the Th12-L3* vertebral bodies;</li> <li>(optional) differential diagnostics of the compression fractures and wedge deformities of the vertebral bodies;</li> <li>(optional) indication of suspected osteoporosis as per the ACR 2018, ISCD 2019 criteria</li> <li>* Bone mineral density (or HU) is not measured for vertebrae with height loss greater than 25%.</li> </ul>		
	Focal lesions in the vertebrae	<ul> <li>Localisation of the focal lesion indicating the bone name</li> <li>Mean density of the focal lesion</li> <li>Linear dimensions of the focal lesion (long and perpendicular short axes), mm</li> <li>(Optional) vertical size of the focal lesion the size of &gt; 10 mm, mm</li> </ul>		
	Intracranial hemorrhage	<ul> <li>Type of hemorrhage ("Type of hemorrhage –", epidural, subdural, subarachnoid, or intracerebral);</li> <li>Hemorrhage volume in ml or cm<sup>3</sup></li> <li>(optional) detection of skull fractures</li> </ul>		
Head CT	Ishemic stroke	<ul> <li>Basin of acute ischemic stroke (ACA, MCA, PCA, VBB).</li> <li>ASPECTS score (0–10), in case middle cerebral artery (MCA) circulation is affected;</li> <li>(optional) post-stroke changes and vascular lesions (location and volume)</li> </ul>		
	Routine measurements	<ul> <li>Distance of the transverse dislocation (mm)</li> <li>VCR 1, VCR 2, VCR 3, width of the 3<sup>rd</sup> ventricle, mm</li> <li>Downward displacement of the cerebellar tonsils in relation to the foramen magnum, mm</li> <li>Degree of downward displacement of the cerebellar tonsils</li> </ul>		

Modality	Target pathology	Conclusion must contain
	Various lung pathologies: pleural effusion, pneumothorax, focal opacity, infiltration/consolidation, dissemination, cavity, atelectasis, calcification/calcified pulmonary nodule, mediastinum widening, cardiomegaly, cortical bone fracture, consolidated fracture	<ul> <li>Probability of each radiologic sign</li> <li>localisation and identification of the findings</li> </ul>
Chest XR	Pulmonary tuberculosis	- presence of the condition in the entire study (differential diagnosis), disease-specific terms
	pneumonia, purulent and necrotic conditions	<ul> <li>presence of the condition in the entire study (differential diagnosis), disease-specific terms</li> <li>localization of pathological findings (side, lobe plane)</li> </ul>
	hydrothorax	<ul> <li>presence of the condition in the entire study (differential diagnosis), disease-specific terms</li> <li>localization of pathological findings (side)</li> </ul>
	pneumothorax	<ul> <li>presence of the condition in the entire study, disease-specific terms</li> <li>localization of pathological findings (side)</li> </ul>
	Atelectasis	<ul> <li>presence of the condition in the entire study (differential diagnosis), disease-specific terms</li> <li>localization of pathological findings (side, lobe plane)</li> </ul>
	Pulmonary masses	<ul> <li>presence of the condition in the entire study (differential diagnosis), disease-specific terms</li> <li>localization of pathological findings (side, lobe plane)</li> </ul>
	Cardiomegaly	<ul> <li>presence of the condition in the entire study, disease-specific terms</li> <li>Cardiothoracic ratio (0-1)</li> </ul>
	Mediastinal disease	<ul> <li>presence of the condition in the entire study (differential diagnosis)</li> <li>type (pneumomediastinum, widening) and localization of pathological findings (part of the mediastinum)</li> </ul>

Modality	Target pathology	Conclusion must contain			
	Rib/s fracture	<ul> <li>presence of the condition in the entire study, disease-specific terms</li> <li>localization of pathological findings (side, rib number)</li> <li>displacement (optional)</li> </ul>			
Head XR	Sinusitis	<ul> <li>Localization of findings</li> <li>opacified area as a percentage of the total area of the sinus Defects in the sinus walls</li> </ul>			
	Arthrosis	<ul> <li>localisation of the signs in the entire study</li> <li>severity of the identified changes (arthrosis degree 1-3)</li> </ul>			
	Fracture	<ul> <li>localisation of the findings</li> <li>(optional) quantitative estimation of the bone fragment diastasis</li> </ul>			
	Longitudinal flat foot	- Flat foot grade – probability			
	Transverse flat foot	– Intermetatarsal angle, angle of deviation of the big toe, flat foot stage			
	Fracture of vertebral bodies	<ul> <li>List of all vertebrae with height loss over 25%;</li> <li>(optional) indicate the degree of height loss</li> </ul>			
MSS VP	Osteochondrosis	<ul> <li>Probability of signs of osteochondrosis</li> </ul>			
WISS AK	Scoliosis	<ul> <li>direction of the scoliosis curve;</li> <li>localisation of the findings</li> <li>deformity angles of the spinal axis (absolute values and/or scoliosis grade);</li> <li>in case of two oppositely directed C-shaped scoliosis - the conclusion must contain the following phrase "S-scoliosis and the measurement of angular deformity to the right and to the left"</li> </ul>			
	Spondylolisthesis	<ul> <li>localisation of the findings</li> <li>direction of displacement;</li> <li>measurement of vertebral displacement degree (degree of displacement)</li> </ul>			
MMG	breast cancer	<ul> <li>ACR tissue density (each breast)</li> <li>presence of calcifications</li> <li>presence of lesions</li> <li>disruption of tissue architecture</li> <li>detecting abnormalities in axillary lymph nodes</li> <li>BI-RADS category for each breast</li> </ul>			

Modality	Target pathology	Conclusion must contain	
	Intracranial neoplasms	<ul> <li>number of findings</li> <li>Localization of findings with regard to the brain structures ("extracerebral", "intracranial")</li> <li>Localization of findings with regard to the brain lobe (for intracranial) / region (for extracerebral) – frontal, temporal, parietal, occipital;</li> <li>(optional) changes of the findings' sizes over time (if any for each finding) compared with the previous MRI (if available) on T2 FLAIR and post-contrast T1</li> </ul>	
Dusta MDI	Multiple sclerosis	<ul> <li>total number of foci;</li> <li>number of contrast-enhanced foci (if there are series with contrast enhancement);</li> </ul>	
Brain MRI	Routine measurements	<ul> <li>displacement of the cerebellar tonsils in relation to the foramen magnum (mm)</li> <li>Degree of downward displacement of the cerebellar tonsils (number 0–3)</li> <li>VCR 1, VCR 2, VCR 3, width of the 3<sup>rd</sup> ventricle, mm</li> <li>Value of the transverse dislocation, if present (mm)</li> <li>White matter hyperintensities (WMHs), grades</li> <li>Volume of WMH sites (total)</li> <li>Volumes of brain and intracranial cerebrospinal fluid</li> <li>(optional) segmentation of the white and grey matters</li> </ul>	
Thoracic spine MRI	Protrusions and hernias, spinal stenosis	<ul> <li>Localizion of dorsal disc protrusions ("Dorsal disc protrusion", Th1-Th2, Th2-Th3, etc.);</li> <li>Anteroposterior diameter of the protruded discs in sagittal planes ("Size mm");</li> <li>anteroposterior and frontal areas of the dural sac in axial planes; anteroposterior area of the dural canal in sagittal planes ("Dural sac area in axial planes mm, and in sagittal planes mm");</li> <li>Area of the subdural cavity at the disc level ("Area of the subdural cavity mm<sup>2</sup> at", Th1-Th2, Th2-Th3, etc.)</li> </ul>	
	Focal lesions in the bone	<ul> <li>Localisation of the focal lesion indicating the vertebra name</li> <li>Presence/absence of contrast fluid in the focal lesions (where post-contrast series are available)</li> </ul>	

Pro Cervical spine MRI	rotrusions and hernias, spinal stenosis	<ul> <li>Localization of dorsal disc protrusions ("Dorsal disc protrusion", C4–C5, C5–C6, etc.);</li> <li>Anteroposterior diameter of the protruded discs in sagittal planes ("Size – mm");</li> <li>anteroposterior and frontal areas of the dural sac in axial planes; anteroposterior area of the dural canal in sagittal planes ("Dural sac area in axial planes mm, and in sagittal planes mm");</li> <li>Area of the subdural cavity at the disc level ("Area of the subdural cavity – mm<sup>2</sup> at " C4–C5, C5–C6, etc.)</li> </ul>	
	Focal lesions in the bone	<ul> <li>Localisation of the focal lesion indicating the vertebra name</li> <li>Presence/absence of contrast fluid in the focal lesions (where post-contrast series at available)</li> </ul>	
Pro	rotrusions and hernias, spinal stenosis	Localization of dorsal disc protrusions ("Dorsal disc protrusion, L1–L2, L2–L3, etc.); Anteroposterior diameter of the protruded discs in sagittal planes ("Diameter – mm");	
spine MRI	Focal lesions in the bone	<ul> <li>Localisation of the focal lesion indicating the vertebra name</li> <li>Presence/absence of contrast fluid in the focal lesions (where post-contrast series are available)</li> </ul>	
Knee joint MRI	Chondromalacia	<ul> <li>Depth of the cartilage defect</li> <li>Chondromalacia grading</li> </ul>	
Ro Lesser pelvis MRI Ro	Routine measurements of the uterus Routine measurements of the prostate gland	<ul> <li>Chondromalacia grading</li> <li>Uterus position version and flexion</li> <li>Location of the uterus (lateroversion)</li> <li>Linear dimensions of corpus and cervix (longitudal, transverse and vertical / anteropole</li> <li>Endometrial thickness</li> <li>Thickness of the junctional area</li> <li>Myometrial thickness</li> <li>Absent uterus: message about the absence of the target organ</li> <li>(optional) ovaries: length, width and height, mm</li> <li>Dimensions of the prostate gland: sagittal (anteroposterior), frontal (transverse), (longitudinal), mm</li> </ul>	

## Appendix 11

### 11.1. STRUCTURE AND COMPOSITION OF THE TEMPLATE FOR «MAMMOGRAPHY REPORT» GENERATED BY AI

No	Key	Values	Comment
110.	Rey	Values D (norfoot)	Comment
		r (perfect)	
1.	Clinical image quality (PGMI)	G (good)	mandatory
		NI (moderate)	
-		1 (inadequate)	
<i>Z</i> .	Right breast (grouping element)		
		A	
2.1.	Density (ACR)	B	Mandatory
2.2.	Skin	unaffected	Mandatory
		affected	
2.3.	Calcifications	not doto sto d	
2.4.	Benign calcifications	not detected	Mandatory
2.5.	Suspicious calcifications	not detected	Mandatory
		lower outer	
215	Quadrants (ontional)	outor innor	If 2.5 is "datastad"
2.1.3.	Quadrants (optional)		II 2.5. Is detected
		lower inner	
		quadrant border	
		diffuse	
252	Distribution of aslaification	regional	If 2.5 is "datastad"
2.3.2.	Distribution of calcification	Segmental	II 2.5. Is detected
		innear	
		clustered	
		part of a lesion	
2.6.	Lesions	detected	Mandatory
		outer upper	
		lower outer	
216	Quadrants	outer inner	If 2.6 is "detected"
2.1.0.	Quadrants	lower inner	II 2.0. IS detected
		augdrant border	
		not detected	
2.7.	Disrupted tissue architecture	detected	Mandatory
		outer upper	
		lower outer	
2.1.7	Ouadrants	outer inner	If 2.7. is "detected"
	<b>Z</b>	lower inner	
		quadrant border	
		undetectable	
2.8.	Axillary lymph nodes	detected, unaffected	Mandatory
		detected, affected	
3.	Left breast (grouping element)	•	•
		Α	
2 1	Donsity (ACP)	В	Mandatory
3.1.	Duisity (ACK)	C	ivialidator y
		D	
2.2	Skin	unaffected	Mandatory
5.2.		affected	Ivialidator y
3.3.	Calcifications		
3.1	Benign calcifications	not detected	Mandatory
5.4.	Denign calenteations	detected	

No.	Кеу	Values	Comment
35	Suspicious calcifications	not detected	Mandatory
5.5.	Suspicious calementoris	detected	Waldatory
		outer upper	
		lower outer	
3.1.5.	Quadrants (optional)	outer inner	If 3.5 is "detected"
		lower inner	
		quadrant border	
		scattered	
		diffuse	
		regional	
2.5.3.	Distribution of calcification	segmental	If 3.5. is "detected"
		linear	
		clustered	
		part of a lesion	
3.6	Lesions	not detected	Mandatory
5.0.		detected	Waldatory
		outer upper	
		lower outer	
3.1.6.	Quadrants	outer inner	If 3.6. is "detected"
		lower inner	
		quadrant border	
37	3.7. Disrupted tissue architecture	not detected	Mandatory
5.7.		detected	ivialidator y
		outer upper	
		lower outer	
3.1.7.	Quadrants	outer inner	If 3.7. is "detected"
		lower inner	
		quadrant border	
		undetectable	
3.8	Axillary lymph nodes	detected, unaffected	Mandatory
		detected, affected	
4.	Conclusion (grouping element)		
		BI-RADS 1	
4.1.		BI-RADS 2	Mandatory
	Right breast	BI-RADS 3	
		BI-RADS 4	
		BI-RADS 5	
		BI-RADS 1	
		BI-RADS 2	
4.2.	Left breast	BI-RADS 3	Mandatory
		BI-RADS 4	
		BI-RADS 5	

# 11.2 STRUCTURE AND COMPOSITION OF THE TEMPLATE FOR «CHEST X-RAY REPORT» GENERATED BY AI

No.	Key	Values	Comment
1.	Lung tissue transparency	- preserved - decreased because of - elevated	Mandatory. Use "decreased because of" when 1.1, 1.2, 1.3, 1.5 have values Use "elevated" when 1.4 have values
1.1.	Focal lesions	<ul><li>isolated site</li><li>multiple sites</li><li>focal lesions</li></ul>	Mandatory
1.1.1.	Report	Text (localization, type of sign)	Displayed if 1.1 (Focal lesions) is selected
1.2.	Infiltrates	- infiltration / consolidation	Mandatory
1.2.1.	description	Text (localization)	Displayed if 1.2 (Infiltrates) = infiltration / consolidation
1.3.	Atelectasis	- atelectasis	(use if the type is distinguishable)
1.3.1.	description	Text (localization)	Displayed if 1.3 (Infiltrates) = atelectasis
1.4.	Pneumothorax	- signs of air leaks in pleural cavity	Mandatory
1.4.1.	description	Text (localization)	Displayed if 1.4 = signs of air leaks in pleural cavity
1.5.	Hydrothorax	signs of pleural effusion	Mandatory
1.5.1.	description	Text (localization)	Displayed if $1.5 =$ signs of pleural effusion
2.	Lung markings	<ul><li>no specific features</li><li>thickened</li><li>distorted</li><li>reduced</li></ul>	Optional
3.	description	Text (localization, nature of changes)	Displayed if 2 <> no specific features
4.	Lung hilum	-	Optional
4.1.	Dilation	- not dilated - dilated	Optional
4.2.	Structure	<ul><li>visualization is preserved</li><li>visualization is obliterated</li></ul>	Optional
5.	Diaphragm	-	In presence of values in 5.1-5.3
5.1.	Contours	- clear - unclear	Optional
5.2.	Relaxation	relaxation	Optional
5.2.1.	description	Text (side)	Displayed if $5.3 =$ relaxation
6.	Pleural sinuses	-	Mandatory (corresponding to 1.5)
6.1.	Right	- clear - opaque - obliterated	Mandatory
6.2.	Left	- clear - opaque - obliterated	Mandatory
6.3.	Gas under the dome of diaphragm	- none - present	Optional
7.	Mediastinum	- unchanged - dilated - pneumomediastinum	Mandatory
7.1.	description	Text (localization, nature of dilation)	Optional
8.	Cardiac silhouette	-	Mandatory
8.1.	Enlargement	- not enlarged - enlarged	Mandatory
8.2.	Report	CTR value	Displayed if 8.3 (Enlargement) = enlarged
9.	Aorta	-	Optional

No.	Key	Values	Comment
9.1.	changes	- unchanged - dilated / rotated - elongated	Optional
9.2.	Calcification of the aortic wall	- not detected - detected	Optional
10.	Rib injuries	- not detected - detected	Mandatory
10.1.	description	Text (localization)	Optional. Displayed in 10 (rib injuries) = detected
11.	Bone fracrutes (shoulder blades, spine)	- not detected - detected	Optional
12.	Other pathological changes	- not detected - detected	Optional
12.1.	description	Text	Displayed in 12 (Other pathological changes) = detected
13.	Report	Differentiated diagnostics for each <b>pathology</b> that match the detected radiological signs.	Mandatory
14.	Recommendations	-	Optional
15.	Additional examination	-	Optional

## **REQUIREMENTS FOR DISPLAYING FINDINGS IN ADDITIONAL SERIES OF IMAGES**

Appendix 12

Table 12.1

Modality	Target pathology	Displaying findings
All	All	<ul> <li>Consider contouring individual findings or regions/areas;</li> <li>using masks is possible (contouring with colour filling);</li> <li>numerical indication of findings;</li> <li>Images in the series containing pathological findings should be labelled at the ScrollBar (a separate visualization bar for series level viewing in the additional series).</li> </ul>
	COVID	<ul> <li>Localization of findings (contouring/ mask)</li> </ul>
	Change in lung airness	<ul> <li>Localization of findings (contouring/ mask)</li> </ul>
	Pulmonary emphysema	<ul> <li>Localization of findings (contouring/ mask)</li> </ul>
	Malignant neoplasm in the lungs	<ul> <li>Localization of the nodules (contouring/ mask)</li> </ul>
	Malignant neoplasm in the lungs	<ul> <li>Localization of the nodules (contouring/ mask)</li> </ul>
	in LDCT	
	Free pleural fluid (effusion)	<ul> <li>Localization of the pathological findings (contouring/ mask)</li> </ul>
Chest CT	Enlarged intrathoracic lymph	<ul> <li>Localization of enlarged nodules (contouring/ mask)</li> </ul>
	nodes (lymphadenopathy)	
	Pulmonary tuberculosis	<ul> <li>Localization of the pathological findings (contouring)</li> </ul>
	Sarcoidosis	<ul> <li>Localization of the pathological findings (contouring/ mask)</li> </ul>
	Ischaemic heart disease (Coronary	<ul> <li>Localization of findings (contouring/ mask)</li> </ul>
	calcium)	
	Ischemic heart disease (paracardial	<ul> <li>(optional) localization of findings (contouring/ mask)</li> </ul>
	fat)	

Modality	Target pathology	Displaying findings
	Compression fracture of vertebral bodies	<ul> <li>Labelling (numbering) all vertebrae with height loss of ≥ 25%;</li> <li>Graphical display of the vertebrae height in the anterior, middle or posterior parts (contour) for all analysed vertebrae;</li> <li>Numerical value of the deformity level as % (for all vertebrae with height loss of ≥ 25%), indicating the Genant score;</li> <li>Displaying the results of the AI service in sagittal or curvilinear plane built along the central axis of the spinal column;</li> <li>(optional) numerical value of the bone mineral density (mg/mL) or radio density (HU) of the Th12 L3 vertebral bodies.</li> </ul>
	Dilation of ascending and descending thoracic aorta	<ul> <li>diameter of the ascending aorta on each slice, mm</li> <li>diameter of the descending aorta on each slice, mm</li> <li>localization of findings (contouring/ mask)</li> <li>(optional) curved reconstruction of the aorta (series of images)</li> </ul>
	Dilation of the pulmonary trunk and measurement of the pulmonary trunk diameter	<ul> <li>diameter of the pulmonary trunk on the slice, mm</li> <li>(optional) diameter of the pulmonary trunk on each slice, mm</li> <li>localization of findings (contouring/ mask)</li> </ul>
	Bronchiectatic disease	<ul> <li>Localization of the bronchiectatic disease (contouring/ mask)</li> </ul>
	Focal lesions in the vertebrae	<ul> <li>Localization of the focal lesion (contouring/ mask)</li> </ul>
	Rib/s fracture	<ul> <li>Localization of the fracture (mask)</li> <li>Curved reconstruction of all ribs and spinal column on a slice (a DICOM SC image)</li> </ul>
	Urolithiasis	<ul> <li>Localization of findings (contouring/ mask)</li> </ul>
	Liver lesions	- Localization of the lesions (contouring/ mask)
Abdominal CT	Renal lesions	- Localization of the lesions (contouring/ mask)
	Adrenal gland lesions	- Localization of the adrenal gland lesion (contouring/mask)
	Abdominal aortic aneurysm and measurement of the abdominal aorta diameter	<ul> <li>diameter of the abdominal aorta on each slice, mm</li> <li>localization of findings (contouring/ mask)</li> </ul>

Modality	Target pathology	Displaying findings	
	Compression fracture of vertebral bodies	<ul> <li>Labelling (numbering) all vertebrae with height loss of ≥ 25%;</li> <li>Graphical display of the vertebrae height in the anterior, middle or posterior parts (contour) for all analysed vertebrae;</li> <li>Numerical value of the deformity level as % (for all vertebrae with height loss of ≥ 25%), indicating the Genant score;</li> <li>Displaying the results of the AI service in sagittal or curvilinear plane built along the central axis of the spinal column;</li> <li>(optional) numerical value of the bone mineral density (mg/mL) or radio density (HU) of the Th12-L3 vertebral bodies.</li> </ul>	
	Focal lesions in the vertebrae	<ul> <li>Localization of the focal lesion (contouring/ mask)</li> </ul>	
	Ishemic stroke	<ul> <li>Localization of acute Ishemic stroke areas (contouring/ mask)</li> <li>(optional) detection of post-stroke changes (contouring/ mask)</li> </ul>	
Head CT	Intracranial hemorrhage	<ul> <li>Contouring of findings;</li> <li>(optional) text outlining the finding volume;</li> <li>(optional) labelling skull fracture area(s)</li> </ul>	
FLG	Various lung pathologies: pleural effusion, pneumothorax, focal opacity, infiltration/consolidation, dissemination, cavity, atelectasis, calcification/calcified pulmonary nodule, mediastinal widening, cardiomegaly, cortical bone fracture, consolidated fracture.	<ul> <li>Localization of all findings (contouring)</li> </ul>	
Chest XR	Pulmonary tuberculosis	<ul> <li>Localization of all detected findings (contouring/ mask)</li> </ul>	

Modality	Target pathology     Displaying findings			
	Pneumonia, purulent and	<ul> <li>Localization of all detected findings (contouring/ mask)</li> </ul>		
	Hydrothorax	– Localization of all detected findings (contouring/ mask)		
	Pneumothorax	<ul> <li>Localization of all detected findings (contouring)</li> </ul>		
	Atelectasis	<ul> <li>Localization of all detected findings (contouring)</li> </ul>		
	Pulmonary masses	<ul> <li>Localization of all detected findings (contouring)</li> </ul>		
	Cardiomegaly	- Graphical display of the enlarged cardiac silhouette indicating the cardiothoracic ra		
	Mediastinal disease	<ul> <li>Localization of all detected findings (contouring)</li> </ul>		
	Rib/s fracture	- Localization of all detected findings (contouring)		
	Longitudinal flat foot	- Graphical display of the angle and height of the foot arch and their numerical values		
	Transverse flat foot	<ul> <li>Contouring/ mask)</li> <li>Graphical display of the intermetatarsal angle and the angle of deviation of the big toe (contouring/ mask)</li> </ul>		
	Fracture	<ul> <li>Localization of findings (contouring/ mask)</li> </ul>		
MSS VP	Arthrosis	<ul> <li>Contouring the marginal osteophytes of articular surfaces;</li> </ul>		
MSS AK		<ul> <li>contouring the zones of subchondral osteosclerosis;</li> </ul>		
		<ul> <li>contouring and filling the height of the intra-articular gap</li> </ul>		
	Fracture of vertebral bodies	– Localization of findings on x-ray images (contouring/ mask)		
	Osteochondrosis	– Localization of findings (contouring)		
	Scoliosis	<ul> <li>Localization of findings (contouring along the spinal axis in the curvature area)</li> </ul>		
	Spondylolisthesis	<ul> <li>Localization of findings (contouring)</li> </ul>		
Head XR	Sinusitis	<ul> <li>Localization of the pathological findings (contouring/ mask);</li> </ul>		
		- localization of changes in the sinus walls (contouring/ mask)		
MMG	Breast cancer	– Localization of findings (contouring)		
Brain MRI	Intracranial neoplasms	<ul> <li>Contouring of all neoplasms on non-contrast series using the following colour scheme to highlight different region types: (extracerebral and intracranial);</li> <li>where post-contrast T1 images are available – contouring of the intracranial neoplasms that accumulate the contrast agent (if the accumulation is homogeneous) or all areas in the intracranial neoplasms accumulating CA (if the accumulation is heterogeneous); comparison with the T2 FLAIR series in the same plane;</li> </ul>		
		– (optional) segmentation of the edema area on post-contrast T1 images		

Modality	Target pathology	Displaying findings	
	Multiple sclerosis	<ul> <li>labelling of each finding with symbols</li> </ul>	
	Routine measurements	– WMH severity (mask)	
Cervical spine	Protrusions and hernias, spinal stenosis	<ul> <li>contouring and filling the protrusions and hernias;</li> <li>annotation indicating the size of each finding, mm;</li> <li>labelling of vertebral bodies</li> </ul>	
MRI	Focal lesions in the vertebrae	<ul> <li>Contouring and filling the focal lesions</li> <li>Labelling of vertebral bodies</li> <li>Annotation indicating the size, mm;</li> </ul>	
Thoracic spine MRI	Protrusions and hernias, spinal stenosis	<ul> <li>rnias, spinal</li> <li>contouring and filling the protrusions and hernias;</li> <li>annotation indicating the size of each finding, mm;</li> <li>labelling of vertebral bodies</li> </ul>	
	focal lesions in the vertebrae	<ul> <li>Contouring and filling the focal lesions</li> <li>Labelling of vertebral bodies</li> <li>Annotation indicating the size, mm;</li> </ul>	
Lumbosacral	Protrusions and hernias, spinal stenosis	<ul> <li>contouring and filling the protrusions and hernias;</li> <li>annotation indicating the size of each finding, mm;</li> <li>labelling of vertebral bodies</li> </ul>	
spine MRI	Focal lesions in the vertebrae	<ul> <li>Contouring and filling the focal lesions</li> <li>Labelling of vertebral bodies</li> <li>Annotation indicating the size, mm;</li> </ul>	
Knee joint MRIChondromalacia-Contouring the changes in MRI appearance of the cartilage-Contouring the defects, the cartilage loss areas		<ul> <li>Contouring the changes in MRI appearance of the cartilage</li> <li>Contouring the defects, the cartilage loss areas</li> </ul>	

### Appendix 13 RECOMMENDED ABBREVIATIONS OF THE TARGET PATHOLOGIES AND SIGNS TO BE USED IN THE NAMES OF ADDITIONAL SERIES OF IMAGES AS PART OF THE AI/CV EXPERIMENTAL SETUPS

Table 13.1 Recommended abbreviations of the target pathologies and signs to be used in the names of additional series of images by comprehensive AI services as part of the AI/CV experimental setups

No.	Modality	Region of interest	Abbreviation	
1	СТ	Chest	CT-CHEST	
2	СТ	Abdomen	CT-ABDOMEN	
3	XR	Chest	RG-CHEST	
4	СТ	Head	CT-HEAD	
5	XR	Foot	RG-FOOT	

Table 13.2 Recommended abbreviations of target pathologies and signs to be used in the names of additional series of images by AI services as part of the AI/CV experimental setups

No.	Modality	Region of interest	Target pathology	Abbreviation
1			COVID-19	COVID-19
2			Change in lung airness	PNEUMONIA
3			pulmonary emphysema	EMPHYSEMA
4			Malignant neoplasms of the lungs	CANCER
5			free pleural fluid	PLEV
6			intrathoracic lymph nodes	NODES
7			Pulmonary tuberculosis	TBC
8		Chest	sarcoidosis	SARC
9			bronchiectatic disease	BRONECT
10			Compression fracture of vertebral bodies	VCF
11			signs of IHD (coronary calcium)	CAC
12			signs of IHD (paracardial fat)	PCLIPOS
13			thoracic aorta diameter	T-AORTA
14	СТ		pulmonary trunk diameter	P-TRUNK
15	CI		Adrenal gland lesions	TH-ADRENEO
16			focal lesions in chest bones	BONEMASS
17			Rib/s fracture	CT- COSTAL-FRACT
18			Urolithiasis	UROLITH
19			Liver lesions	LIVERNEO
20			Renal lesions	RENALNEO
21			Adrenal gland lesions	ABD-ADRENEO
22		Abdomen	Compression fracture of vertebral bodies	VCF
23			abdominal aorta diameter	A-AORTA
24			Gallbladder stones	GB-CONCR
25			Routine liver measurements	LIVER-MEAS
26			Routine kidney measurements	RENAL-MEAS
27			Routine measurements of spleen and pancreas	PAN-SPL-MEAS
28			focal lesions in the abdominal and lesser pelvis bones	BONEMASS

29			acute Ishemic stroke	ISCHBRAIN
30		Brain	Intracranial hemorrhage	HAEMOBRAIN
31			routine measurements of the brain	CT-BRAIN-MEAS
32			various lung pathologies	RG-THORAX
33			Pulmonary tuberculosis	RG-LUNG-TBC
34			pneumonia, purulent and	RG-LUNG-PNEUM
35			hydrothoray	RG-FFFUSION
36			nyurothorax	RG-THORAX-PNFLIM
30		Chest	Atelectoris	RG LUNG ATELECT
38			Pulmonary massas	RG-LUNG-ONC
30			cardiomegaly	PG COP
40			Modiastinal disassa	DC MEDIAST
40				PC COSTAL EPACT
41	XR		storpum fracture	DC STEDNUM EDACT
42				EDACTUDE
43			Arthrogic	
44			Aluirosis	
45				L-FLATFOOT
40		Musculoskeletal	fransverse flat foot	I-FLAIFOUI
4/		system	Tracture of vertebral bodies	KG-VERI
48			Osteochondrosis	OCHONDROS
49			Scoliosis	SCOLIOS
50			Spondylolisthesis	LISTHES
51		Paranasal sinuses	sinusites	SINUSITIS
52	MMG	Breast	breast cancer	BREAST
53			Multiple sclerosis	SDBRAIN
54		Brain	Intracranial neoplasms	NEOBRAIN
55			Routine measurements	MR-BRAIN-MEAS
56		Cervical spine	Protrusions and hernias of the discs, spinal stenosis	OCH-CERVICAL
57			focal lesions in the vertebrae	MR-BONEMASS
58	MRI	Thoracic spine	Protrusions and hernias of the discs, spinal stenosis	OCH-THORACIC
59			focal lesions in the vertebrae	MR-BONEMASS
60		Lumbosacral spine	Protrusions and hernias of the discs, spinal stenosis	OCH-LUMBAR
61			focal lesions in the vertebrae	MR-BONEMASS
62		Knee joint	Chondromalacia	CH-MALACIA
63			routine measurements of the uterus	UTERUS-MEAS
64		Lesser pelvis	routine measurements of the prostate gland	PROSTATE-MEAS