Helix™ 3.0

Advanced image processing

GE HealthCare

The X-ray imaging challenge: Variability

Every exam is unique

Variability in patients, exams, and technologists can lead to inconsistent image quality for radiologists.

The result:

- Extra patient dose
- More strain on radiologists and technologists
- Operational inefficiency
- Reduction in capacity

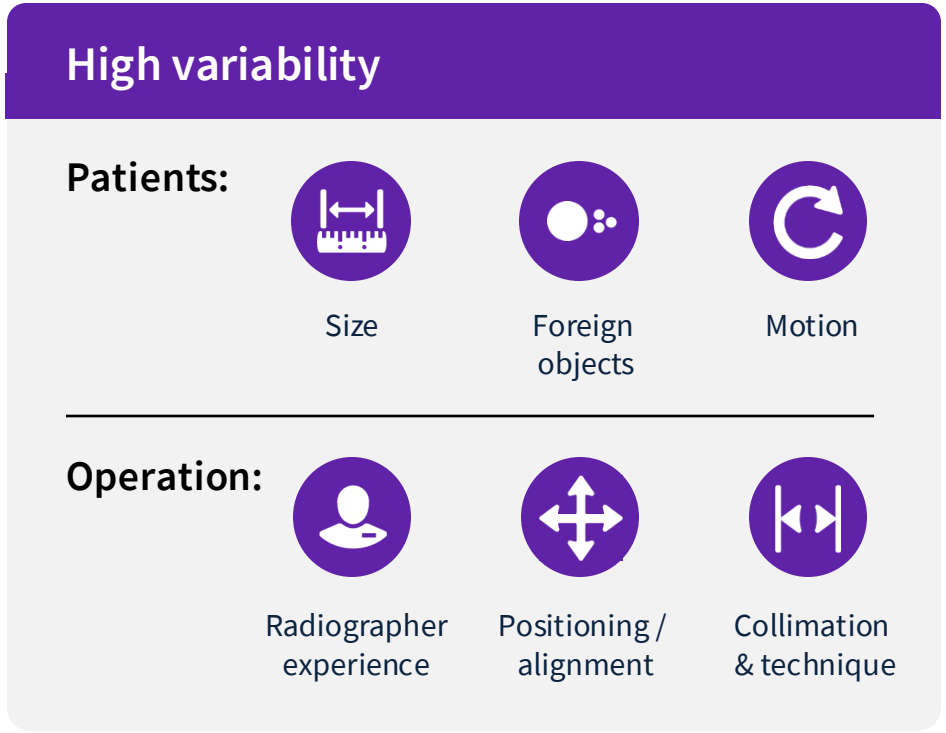


Image variability impacts clinical efficiency and outcomes

25%

of exams can be rejected or repeated[1]

68%

of repeat images are due to poor positioning[1]

38%

of rejected exams can be contributed to chest X-rays with a wide variability depending on the user[1]

1. Little, Kevin J., et al. "Unified database for rejected image analysis across multiple vendors in radiography." Journal of the American College of Radiology 14.2 (2017): 208-216.

Harness AI to deliver improved consistency

Helix™ 3.0 advanced image processing

- Provides outstanding clarity and exceptional anatomical detail across image types with anatomy-specific image enhancement
- Designed to deliver high resolution, excellent edge presentation, consistency and noise handling
- Provides consistency regardless of variations in patient size, anatomy, exam conditions or the skill/experience level of the technologist
- Features four key algorithms:
  - Artificial Intelligence Brightness and Contrast (AIBC)
  - Artificial Intelligence Tissue Equalization (AITE)
  - Local Contrast Enhancement (LCE)
  - Detail Preserving Noise Reduction (DPNR)

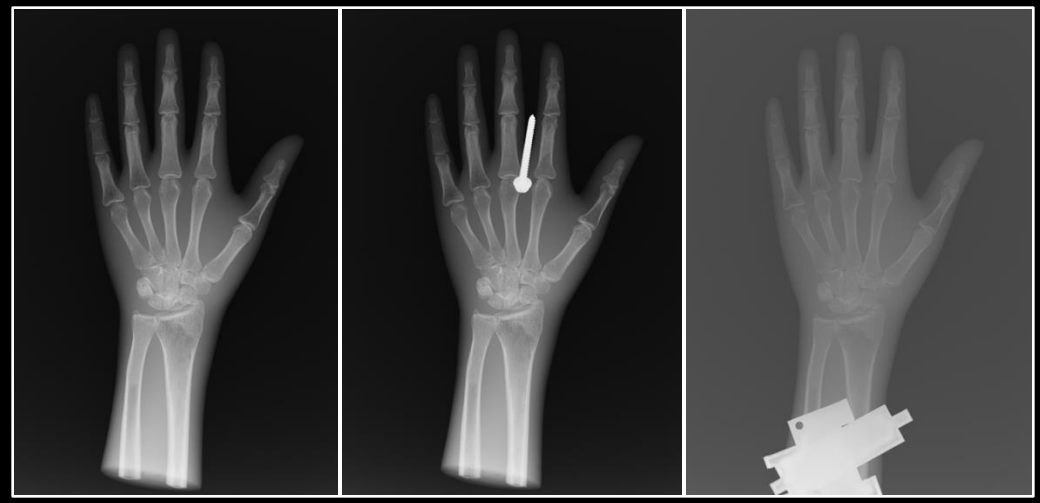
Helix™ 3.0 advanced image processing

Algorithms

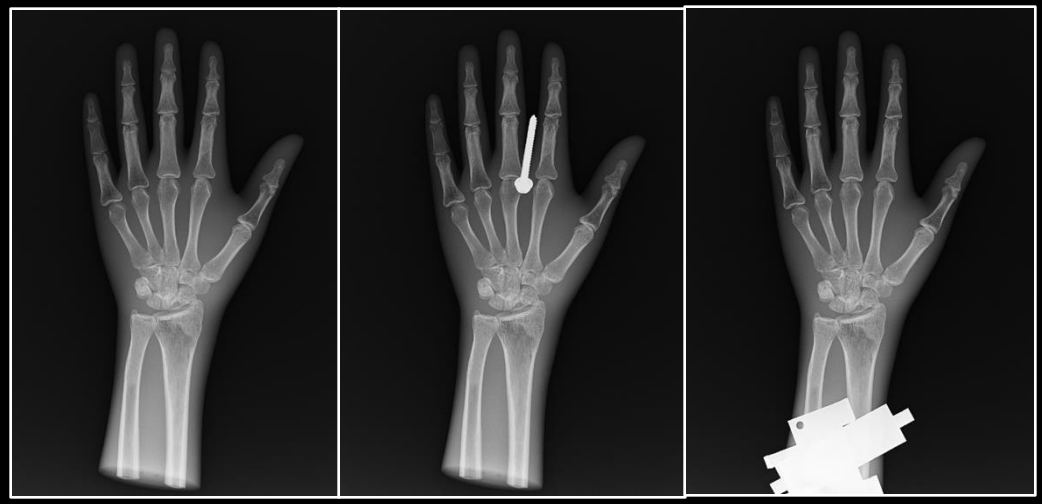
AI Brightness and Contrast (AIBC)

Improves consistency

- Despite variations in exposure techniques and challenging exam conditions
- Robust to noise, anatomical positioning differences, and other objects in the field of view



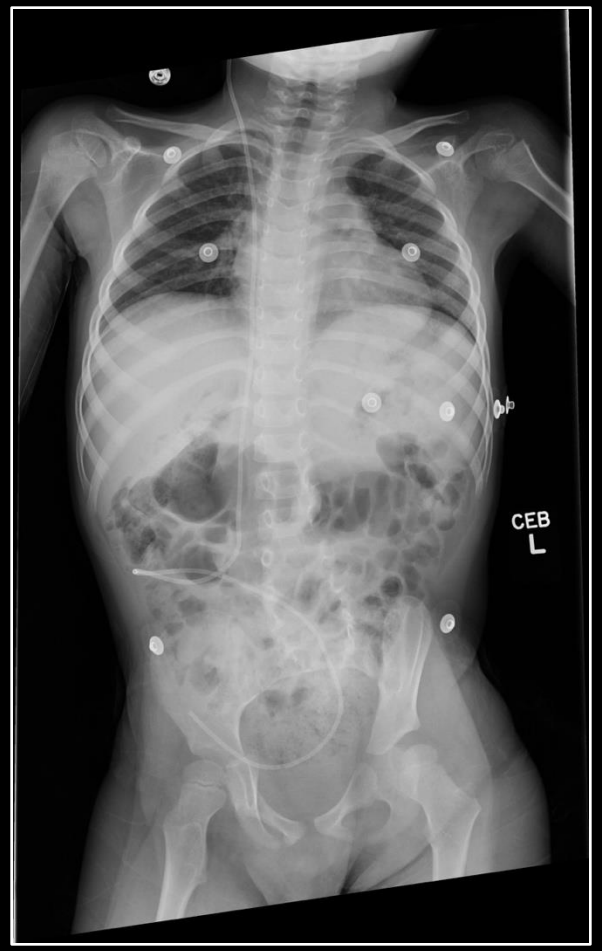
Without AIBC

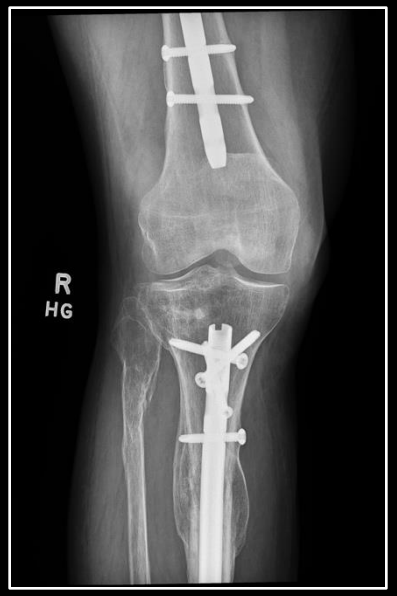


With AIBC

Note: Non–clinical metal used to simulate metal implants

AI Brightness and Contrast (AIBC)





Note: Non–clinical metal used to simulate metal implants.

AI Brightness and Contrast (AIBC): 65 anatomy/view combinations

	Abdomen	Ankle joint	Cervical spine	Chest	Chest left	Chest right	Elbow	Femur	Finger	Foot
Views	Antero-posterior	Antero-posterior	Antero-posterior	Antero-posterior	Anterior-oblique	Anterior-oblique	Antero-posterior	Antero-posterior	Postero-anterior	Antero-posterior
	Postero-anterior	Lateral	Postero-anterior	Postero-anterior	Lateral	Lateral	Lateral		Lateral	Lateral
		Oblique	Left lateral	Antero-posterior-decubitus	Posterior-oblique	Posterior-oblique			Oblique	
			Right lateral	Postero-anterior-decubitus						

	Hand	Hip joint	Knee	Leg	Lumbar spine	Pelvis	Shoulder	Thumb	Toe	Wrist
Views	Postero-anterior	Antero-posterior	Postero-anterior	Antero-posterior	Antero-posterior	Antero-posterior	Antero-posterior	Antero-posterior	Antero-posterior	Postero-anterior
	Lateral	Lateral	Lateral	Postero-anterior	Postero-anterior	Postero-anterior	Axial	Lateral	Lateral	Lateral
	Oblique	Cross table lateral Left	Oblique		Left anterior oblique		Oblique	Oblique	Oblique	Oblique
		Cross table lateral right			Lateral		Y-view			
		Cross table lateral			Left Lateral					
					Right Lateral					
					L5-S1					

AI Tissue Equalization (AITE)

Improves contrast and visibility in over- and under-penetrated areas

- Does not compromise the contrast in other regions of interest
- Uses AI to dynamically estimate thick and thin regions in an image

Improves visualization in the thin regions near the lung and thick pelvis regions

Improves visualization of the thick ankle region

AI Tissue Equalization (AITE)

Improves visualization in the thin regions near the skin line and the hip region

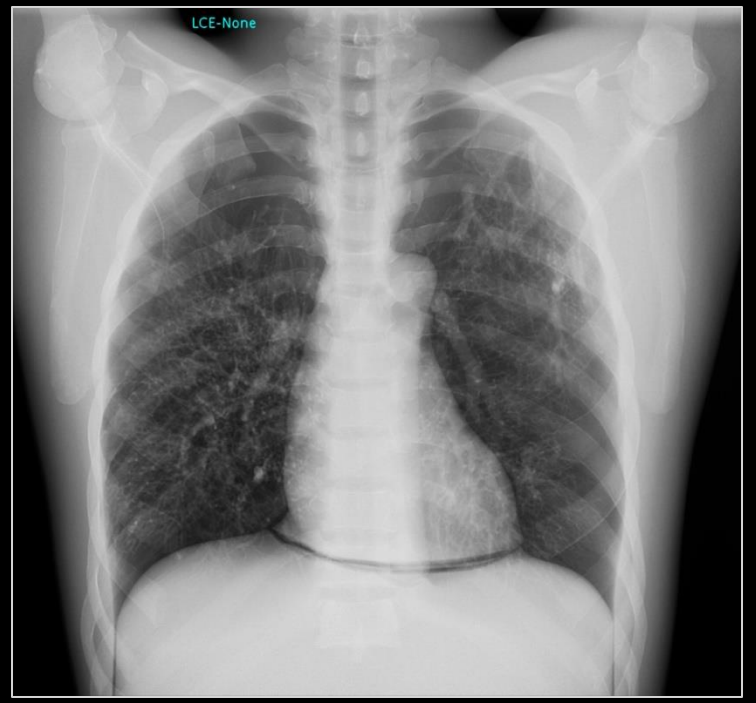
Improves visualization in the thick pelvis region

Improves visualization in the lungs

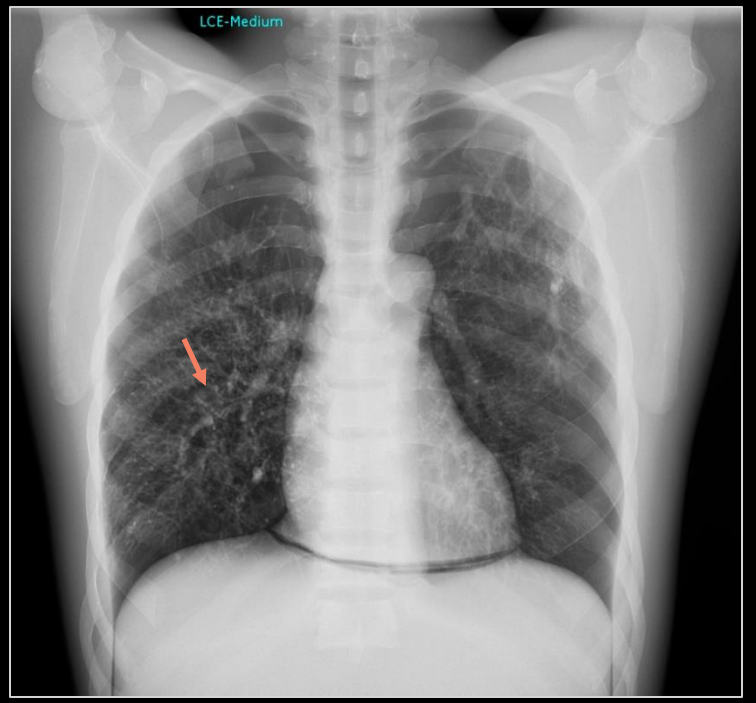
Local Contrast Enhancement (LCE)

Enhances visibility of local details

- Improves contrast for regions of interest in chest, ankle joint, foot and patella images
- Three levels of enhancement (low, medium and high)

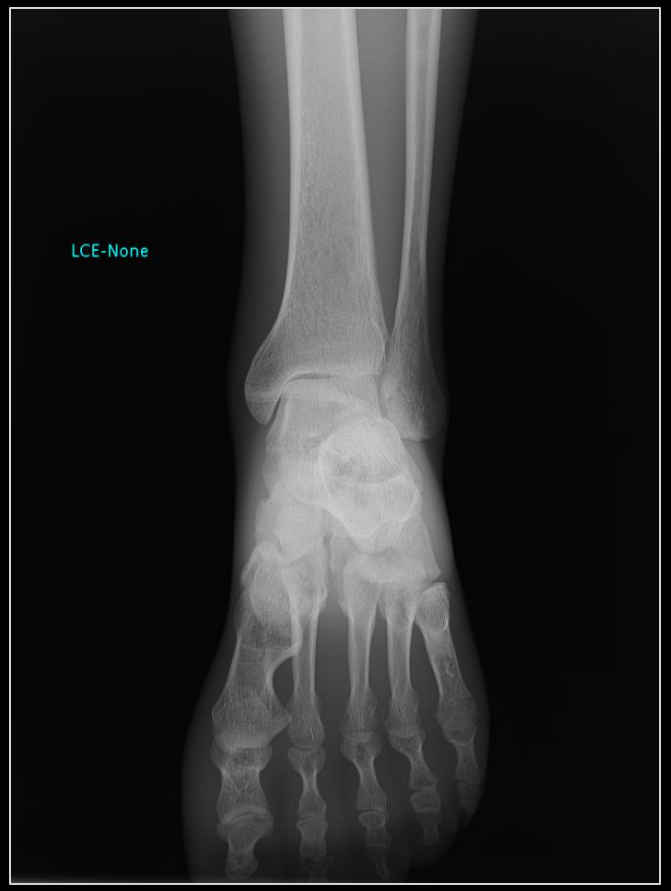


No enhancement



LCE – Medium

Local Contrast Enhancement (LCE)



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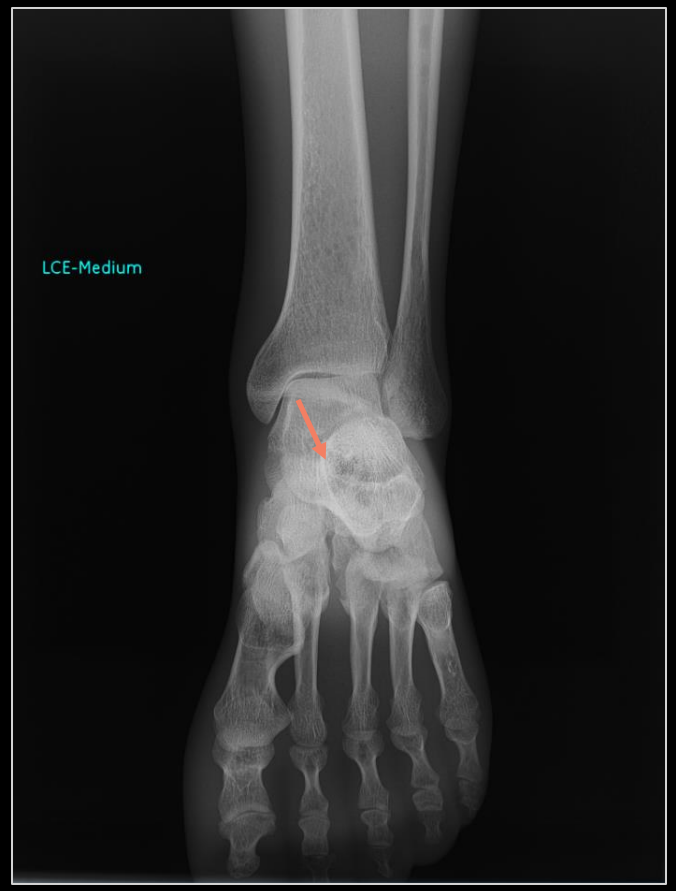


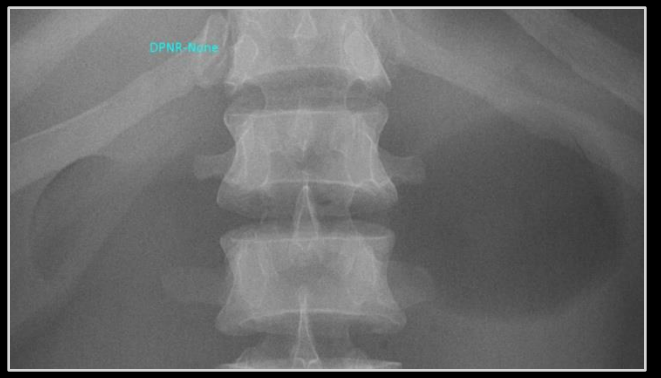
LCE – Medium

Detail Preserving Noise Reduction (DPNR)

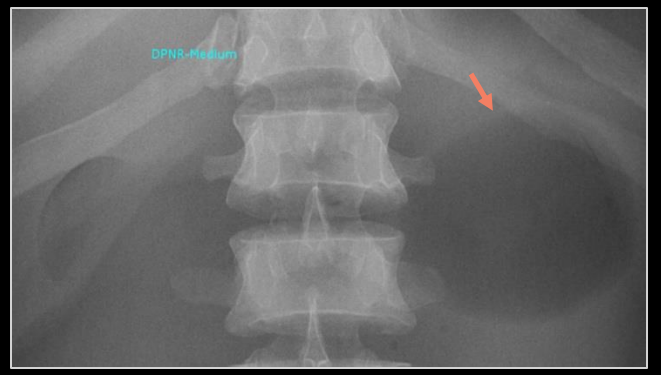
Enhances visibility of local details

- Improves contrast for regions of interest in chest, ankle joint, foot and patella images
- Three levels of enhancement (low, medium and high)

Chest PA

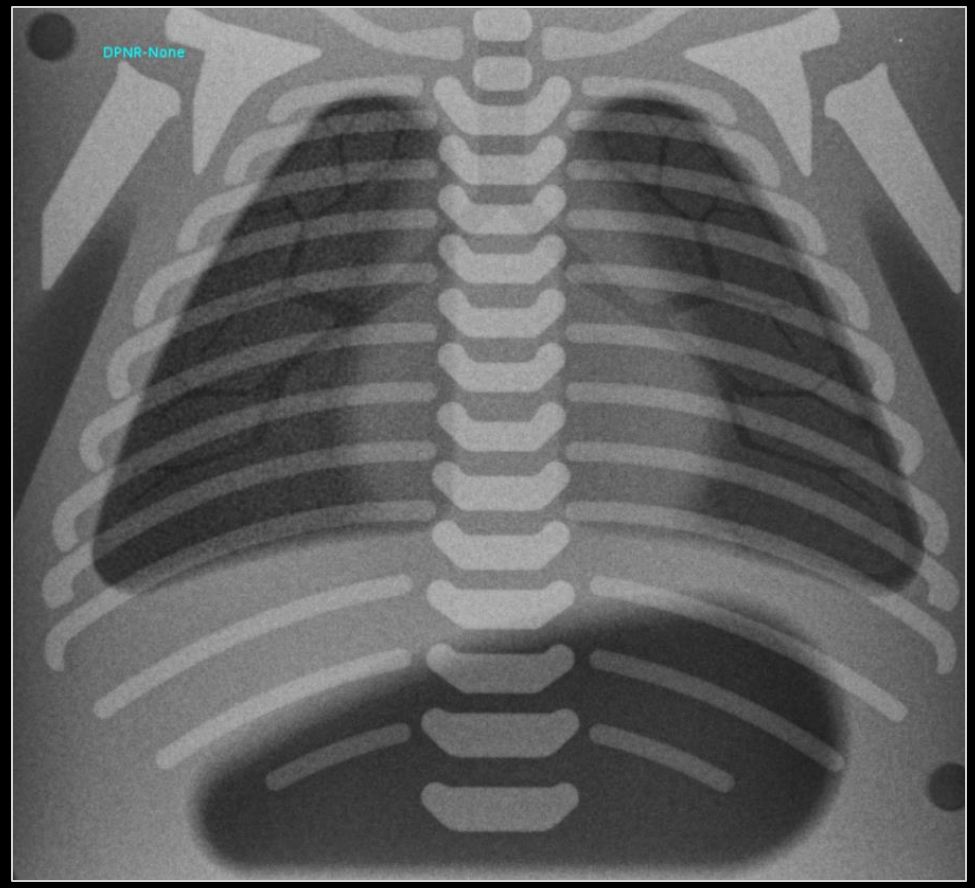


No enhancement

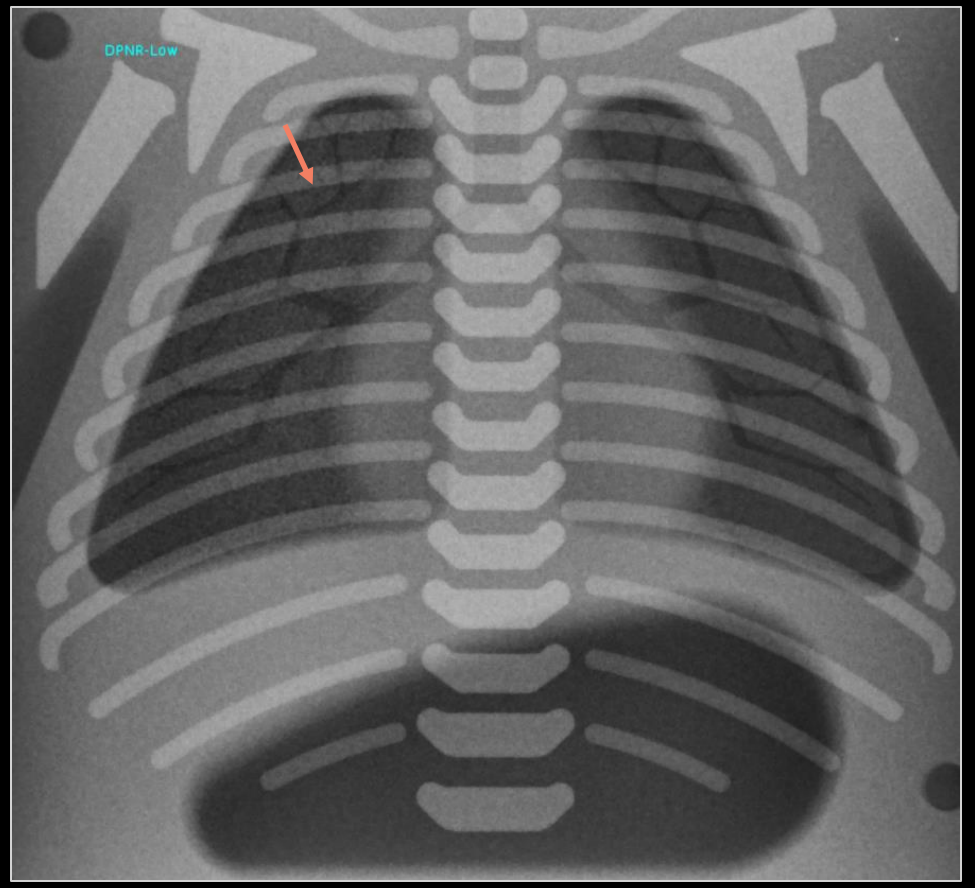


DNPR – Medium

Detail Preserving Noise Reduction (DPNR)



No enhancement



DNPR – Low

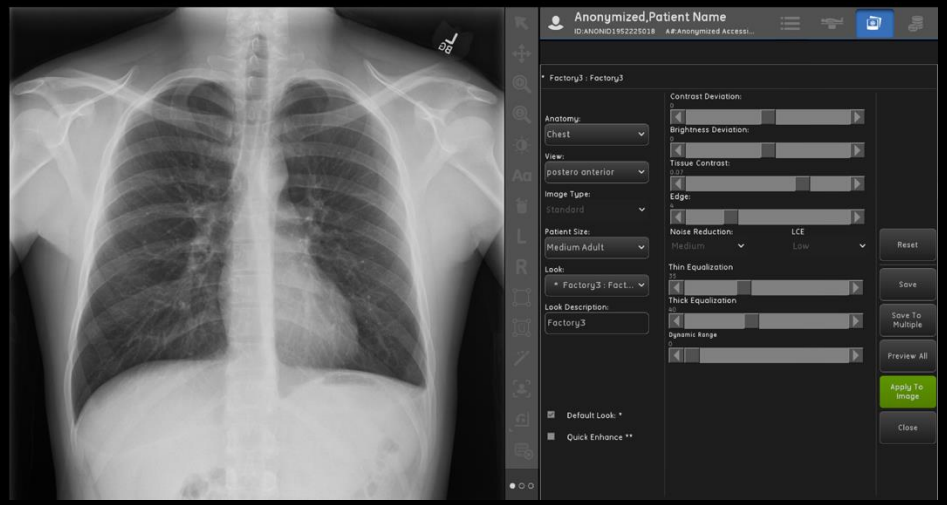
Additional features

Tailored imaging for every site

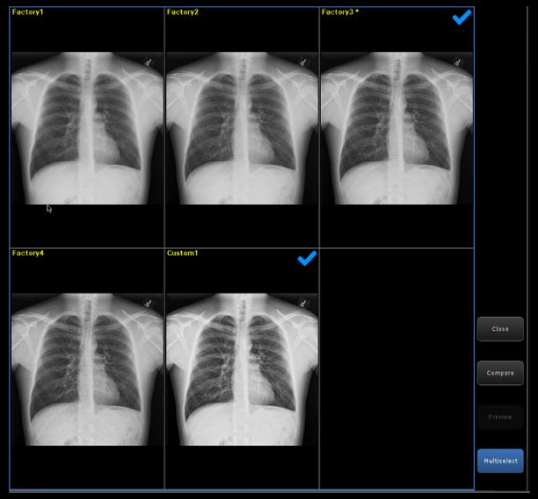
Real-time IP Looks & IQ Compare

Helix™ 3.0 offers four predefined sets of anatomy and view-specific “looks” for different levels of contrast, brightness, edge enhancement, noise reduction and tissue equalization.

- **Real-time IP Looks** enable fast, fine-tuned customization — set as the default look or accessed via QuickEnhance.
- **IQ Compare** displays standard and custom looks side-by-side for easy comparison and decision-making.



Real-time IP Looks



IQ Compare

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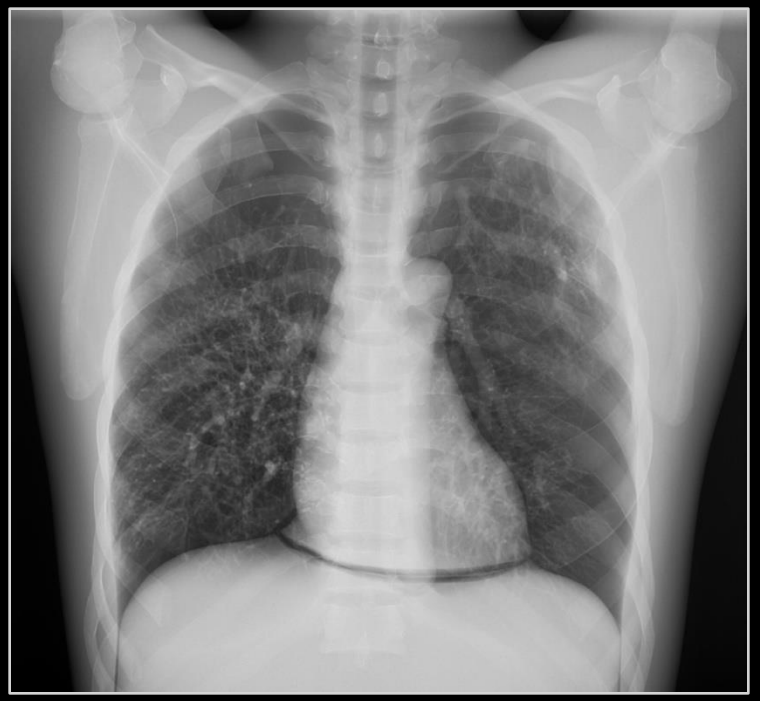
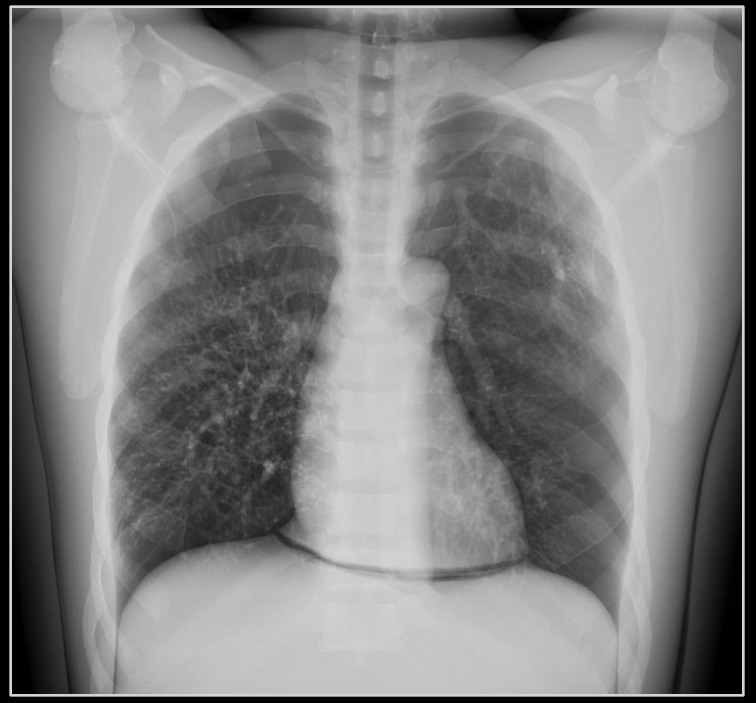
Image gallery

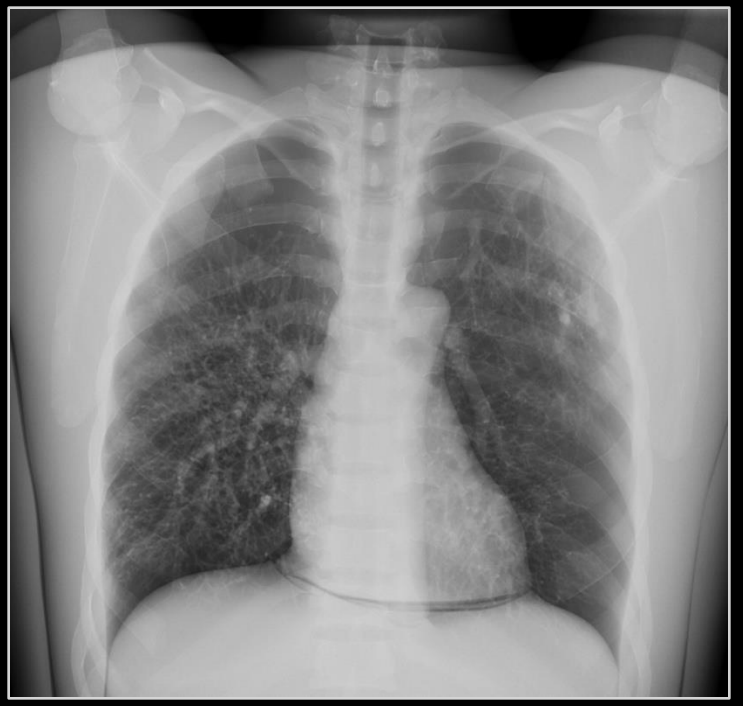
Consistent performance despite variations in patient size



Lungman phantom



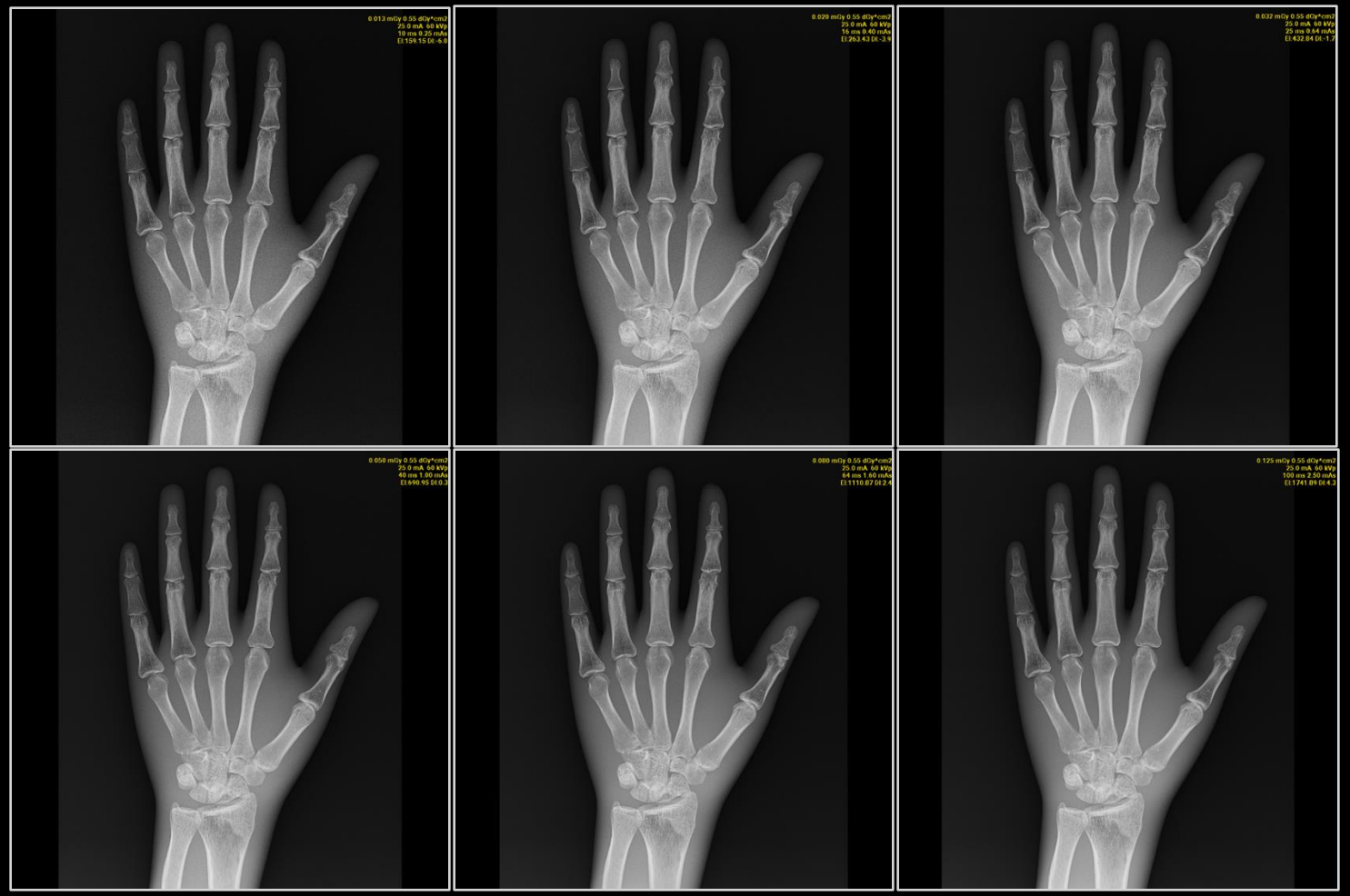
Lungman phantom + one chest plate



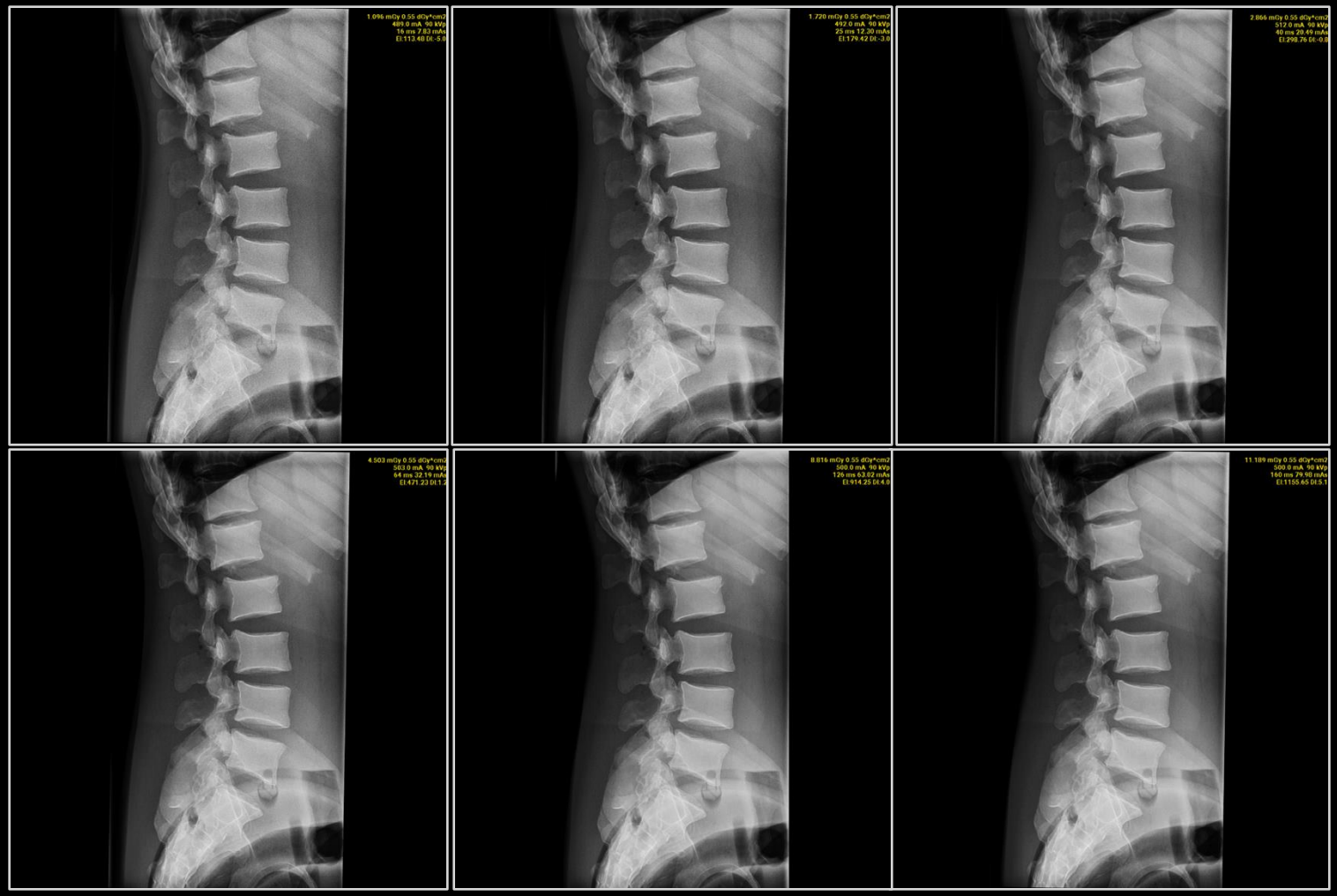
Lungman phantom + two chest plates

Consistent performance despite variations in exposure techniques

Consistent performance despite variations in exposure techniques

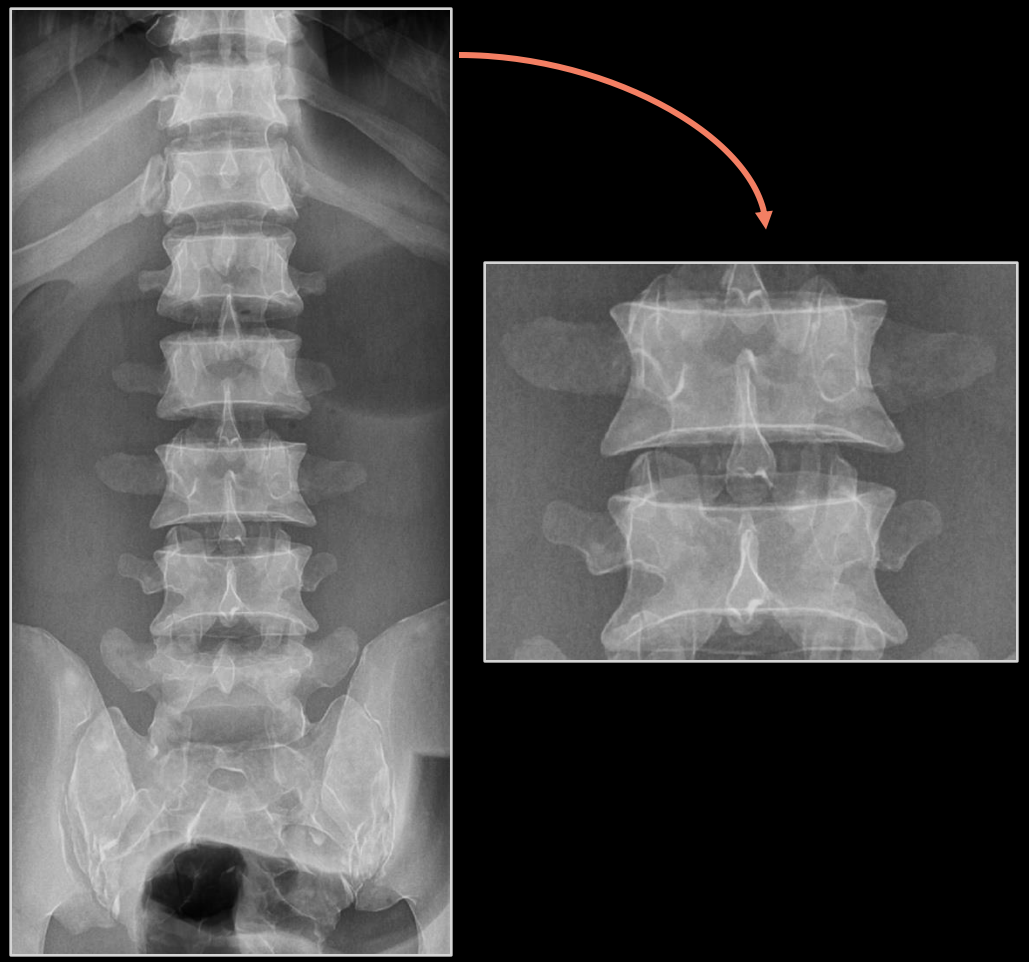


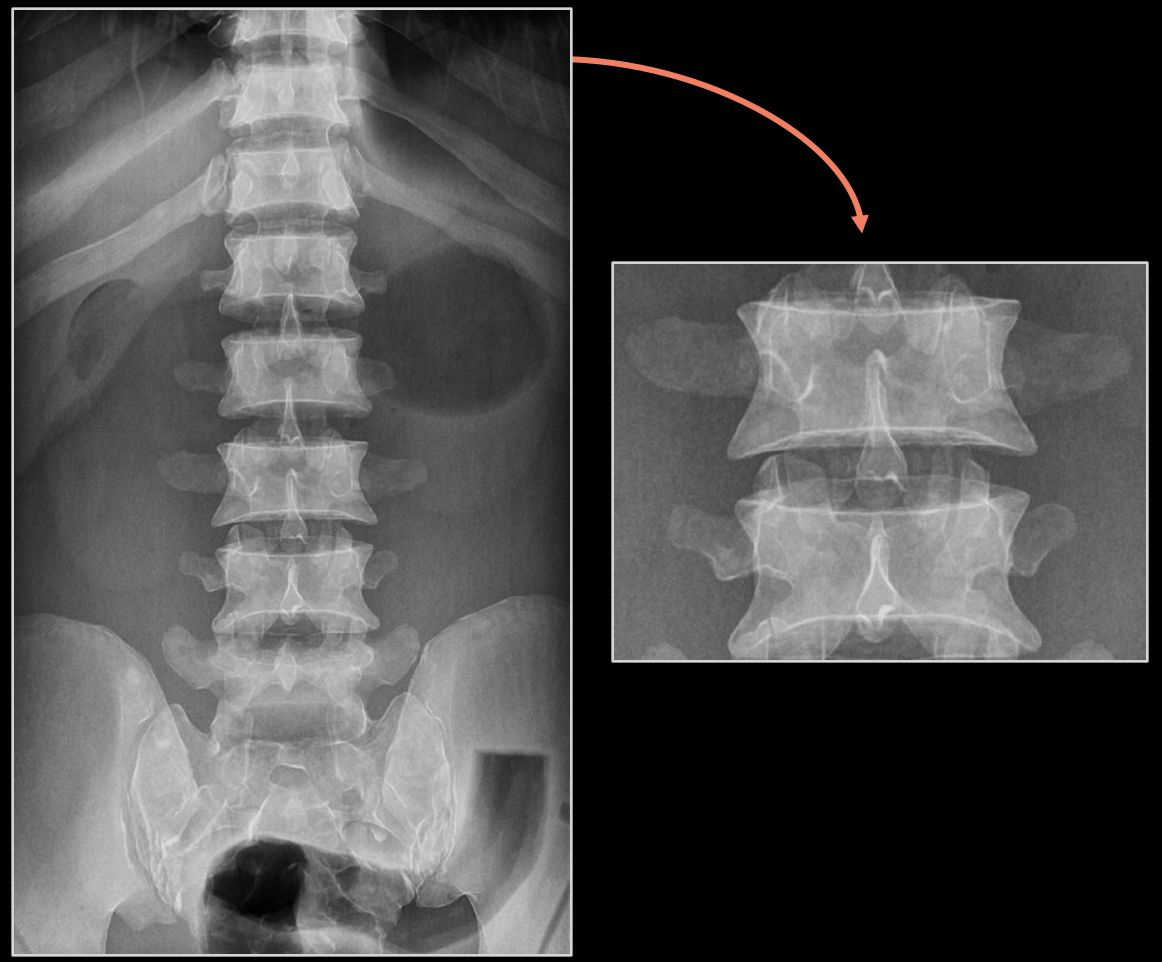
Consistent performance despite variations in exposure techniques



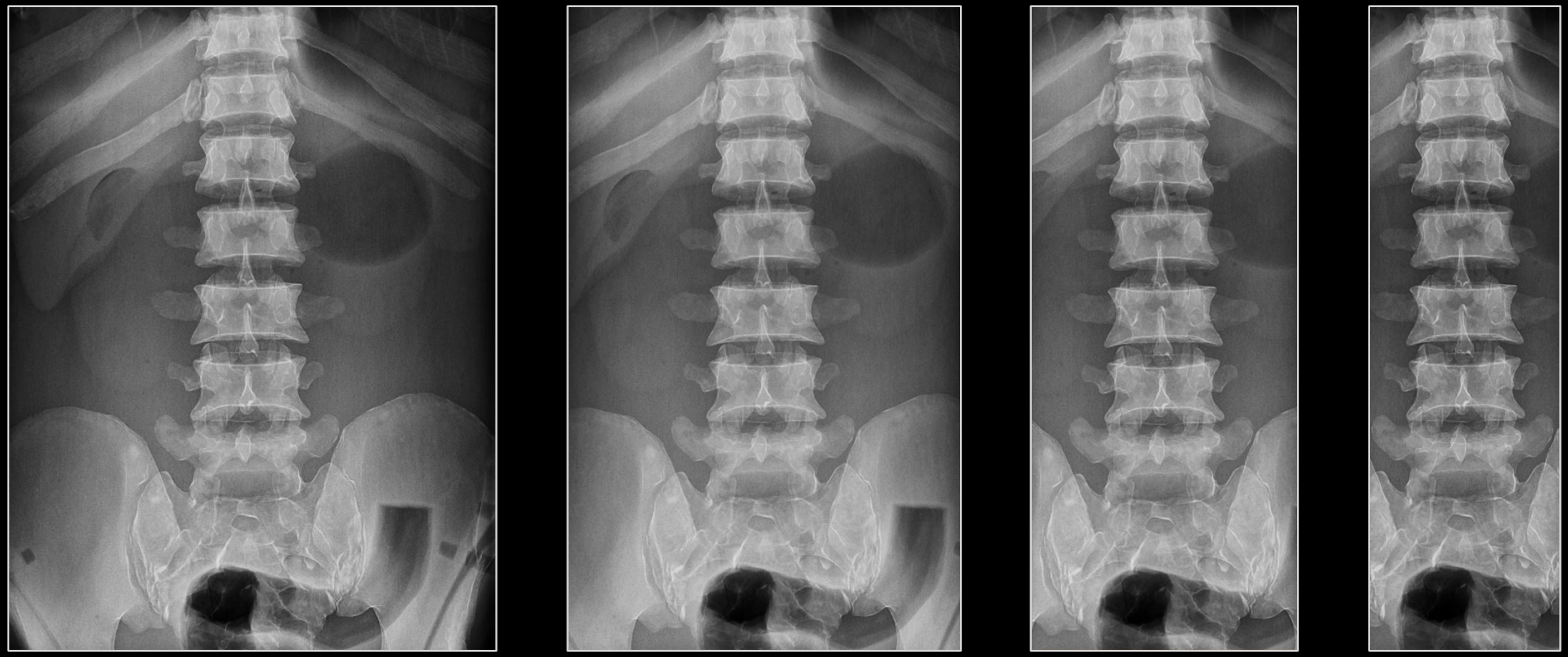
Consistent performance despite variations in collimation

Consistent performance despite variations in collimation





Consistent performance despite variations in collimation



Consistent performance despite variations in presence of metal implants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