PHILIPS

Computed tomography

Demand **excellence** in CT simulation

Philips Brilliance CT Big Bore

Count on Philips to deliver clinical excellence with virtually no compromise to help you fulfill your mission in oncology. Philips Brilliance CT Big Bore was designed from the ground up as a CT simulator, optimized to meet the specific needs of radiation oncology and CT simulation centering on accuracy, patient positioning, superb imaging performance, and the intuitive workflow that your day demands.

Focusing on what matters in

radiation oncology

Leading the way

Brilliance CT Big Bore offers advanced tools to facilitate accurate, efficient patient marking and simulation workflow.

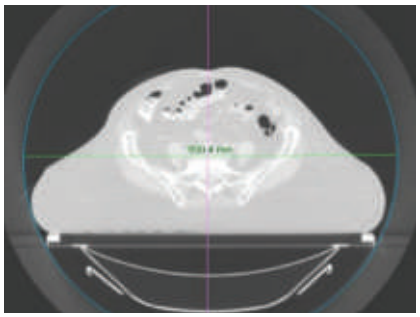
- 85 cm patient aperture for positioning flexibility
- 60 cm true scan FOV for full anatomic visualization
- Reconstructed field of view 50 – 700 mm
- Detector coverage of 24 mm with 16 channels
- Rotation speed (in seconds) of 0.44, 0.5, 0.75, 1.0, 1.5, and 2.0
- Patient table load up to 295 kg (650 lbs)
- Patient marking with table deflection of less than 2 mm deviation with combined horizontal, lateral, and longitudinal displacement*
- iPatient platform to drive confidence and consistency through personalized patient-centric workflow
- 4D respiratory-correlated imaging to manage motion and enhance accuracy
- O-MAR large metal artifact reduction for improved visualization

*Complies with AAPM TG 66 recommendations

Where **imaging** and treatment planning meet

While excellent image quality is the foundation for accurate contouring and treatment plans, radiation oncology demands more. The Brilliance CT Big Bore offers superb imaging and simulation solutions that integrate with your departmental workflow for the accuracy and efficiency cancer care requires.

85 cm patient aperture provides the flexibility to position patients in even the most complex simulation setups, such as with elevated breast boards.



60 cm true scan field of view is ideal for visualization across a diverse patient population.

Confidence without compromise

Reproducible setup

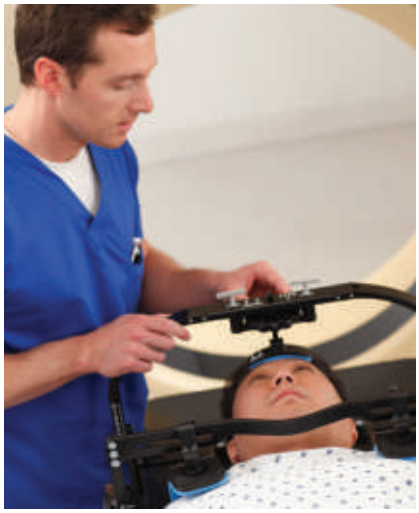
The industry-leading 85 cm aperture allows patient setup to be reproducible from simulation to treatment delivery.

Full visualization

A 60 cm true scan field of view allows for full anatomic visualization without sacrificing the spatial integrity or accuracy of CT numbers needed for dose calculations in radiation therapy planning. A 70 cm extended field of view reconstruction can be performed when necessary to evaluate areas of avoidance in treatment planning.

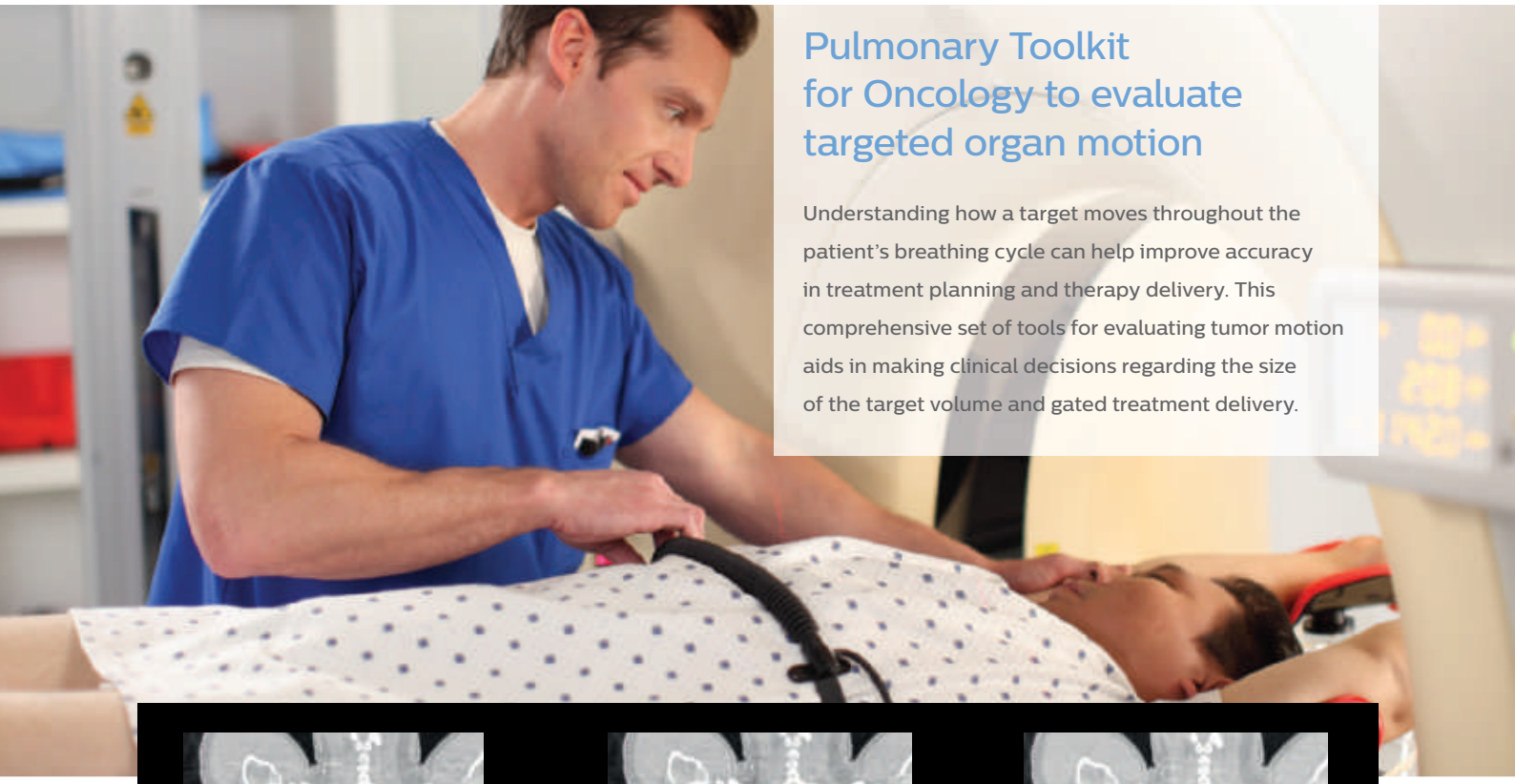
Positional accuracy

Accommodate patient loads of up to 295 kg (650 lbs) with the patient couch. The indexed therapy tabletop is designed to enhance positional accuracy and facilitate clinical efficiency. The table exhibits less than 2 mm of deviation between scan plane and marking plane as recommended in the AAPM Radiation Therapy Committee Task Group No. 66 report.



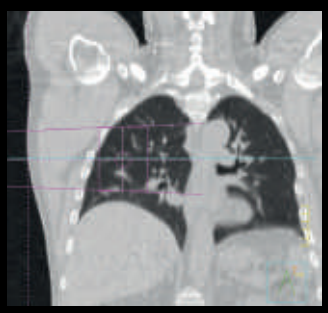
The therapy tabletop accommodates immobilization accessories to enhance positioning accuracy and patient comfort.

Managing motion for

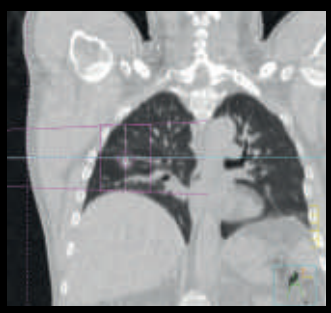


Pulmonary Toolkit for Oncology to evaluate targeted organ motion

Understanding how a target moves throughout the patient's breathing cycle can help improve accuracy in treatment planning and therapy delivery. This comprehensive set of tools for evaluating tumor motion aids in making clinical decisions regarding the size of the target volume and gated treatment delivery.



Tumor location at full inspiration



Tumor location at full expiration

Maximum intensity projection over phases

Prospective axial mode

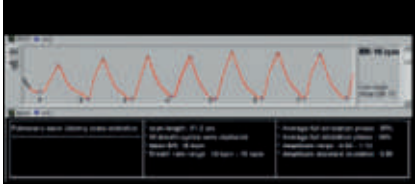
Triggers an axial scan at a threshold breath level. This reduces artifacts due to respiratory motion in patients who are not able to hold their breath during the scan.

Prospective spiral mode

Allows for visualization of the breathing waveform beginning a spiral scan at a desired breath level. This mode is used in conjunction with breath-hold imaging.

Retrospective spiral (4D CT) mode

Generates multiphase images, providing visualization of motion during the full respiratory cycle. Resulting images are used to assess motion of tumor or critical organs and to delineate a target volume that encompasses the entire range of tumor motion. CT Big Bore offers up to 120 sec "tube on" time for 4D CT studies.



A review of the patient's respiratory waveform and breathing statistics from the scan may help determine if the patient could be a candidate for gated therapy by demonstrating consistency in breath rate and depth as well as maximum inhale and exhale phases across all breaths acquired.

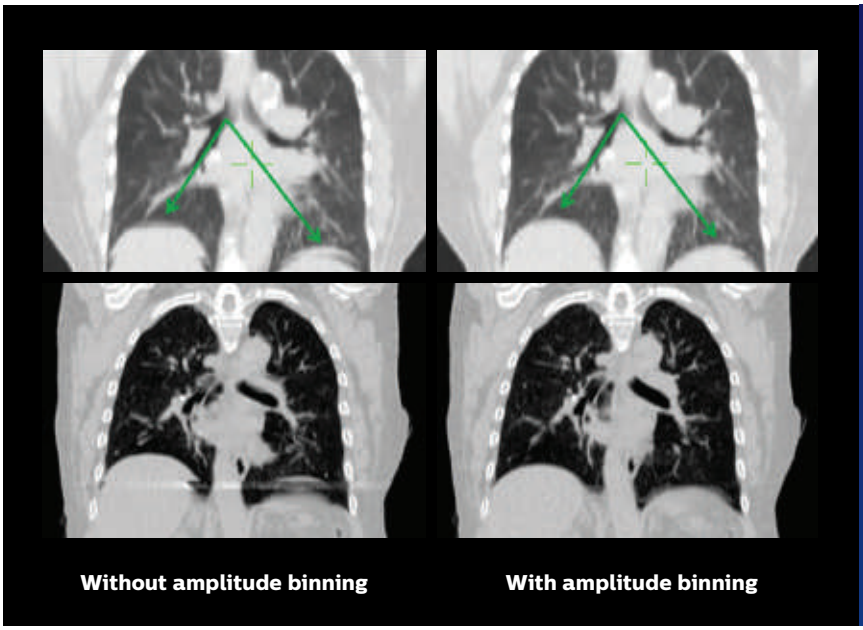
treatment confidence

Pulmonary Viewer

Provides visualization of the respiratory phases and allows for analysis of the extent of motion and review of the patient's respiratory waveform. Adjust the cine mode speed for motion over time and review breathing statistics to help in evaluating whether a patient could be a candidate for gated therapy delivery.

Philips also provides an interface for a respiratory surrogate such as the Real-Time Position Management (RPM) Respiratory Gating system device from Varian Medical Systems to connect to the scanner.

The Philips bellows pneumatic device uses a transducer integrated directly to the scanner to record the patient's waveform during imaging in order to measure changes in pressure caused by respiratory motion.



Without amplitude binning **With amplitude binning**

TrueImage 4D amplitude binning

Employs a proprietary algorithm that uses the amplitude of the respiratory signal in addition to phase-based information when creating 4D CT volumes. This compensates for uneven breathing patterns and can be used to enhance image quality in patients who have difficulty breathing regularly.

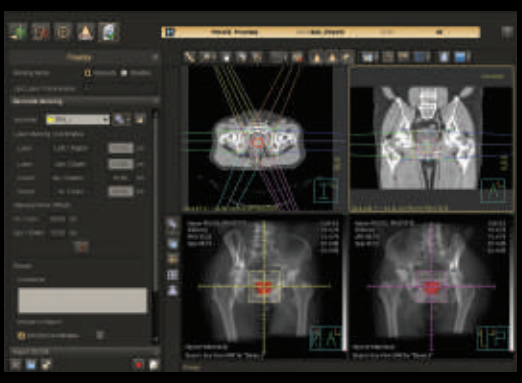
Efficiently move from scan to plan with virtual simulation and patient marking integrated at the scanner. The Philips TumorLOC application offers an accurate and efficient workflow for patient marking and virtual simulation directly from the scanner console.

Speed time to **treatment**

Tools assist with isocenter localization, generating maximum, minimum, and average intensity projections, contouring target volumes and critical structures, beam placement, and machine characterizations for routine and respiratory-correlated studies.

Simple simulation

Complex simulation



This flexibility in radiation oncology workflow is designed for versatility, with isocenter localization and virtual simulation at the console to help save time. Accuracy in patient treatment setup is enhanced because the patient is imaged in the planned treatment position. Allowing for isocenter localization and patient marking during CT simulation aids reproducibility in patient setup between simulation and treatment delivery.

TumorLOC supports both absolute and relative patient marking methods and allows export of isocenter coordinates directly to the laser positioning system from the application. For virtual simulation, create MPRs and add beams and modifiers, which can be visualized on the DRRs and DCRs.

0.8mm slice thickness DRR **DCR**

The **power** of two

Philips provides two leading technologies that can improve image quality. iDose^4 improves image quality* through artifact prevention and increased spatial resolution at low dose. O-MAR** reduces artifacts caused by large orthopedic implants. Together they produce high image quality with reduced artifacts.

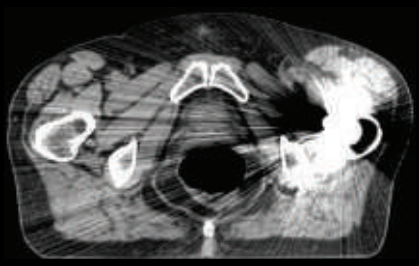
O-MAR and iDose^4

iDose^4 – under a minute

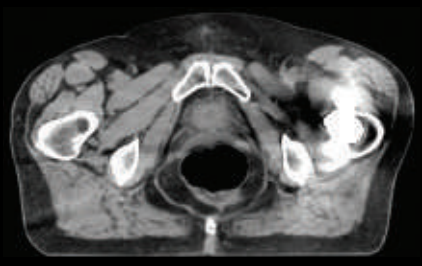
Philips iDose^4 gives you control of the dial so you can personalize image quality based upon your patients' needs at low dose. The majority of reference protocols are reconstructed in under a minute while using iDose^4. When used in combination with advanced technologies of the Brilliance CT Big Bore, this provides a unique approach to managing important factors in patient care.

iDose^4 off

iDose^4 on

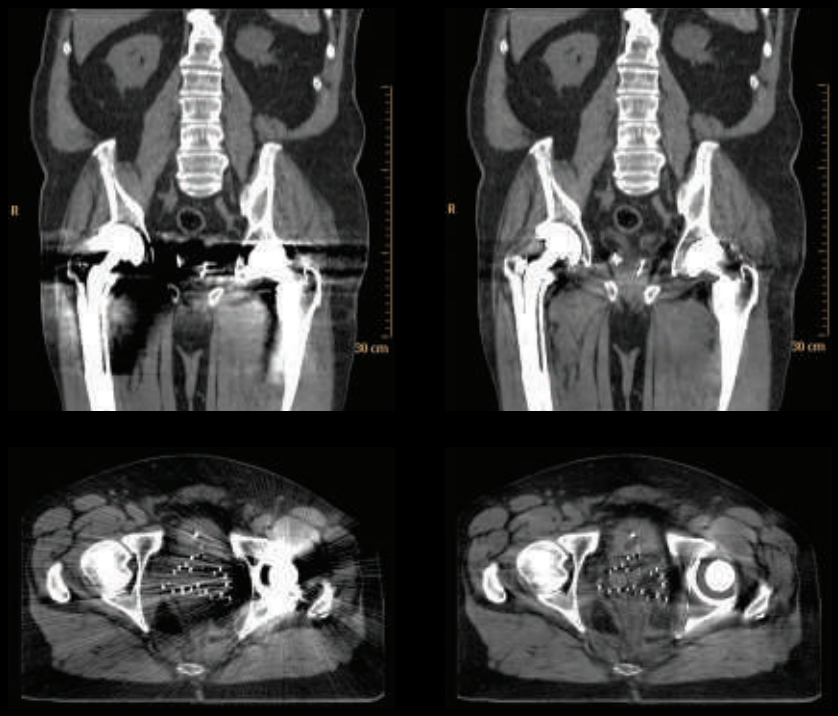


iDose^4 and O-MAR off



iDose^4 and O-MAR on

* Improved image quality is defined by improvements in spatial resolution and/or noise reduction as measured in phantom studies.
** Optional.



Original | With O-MAR

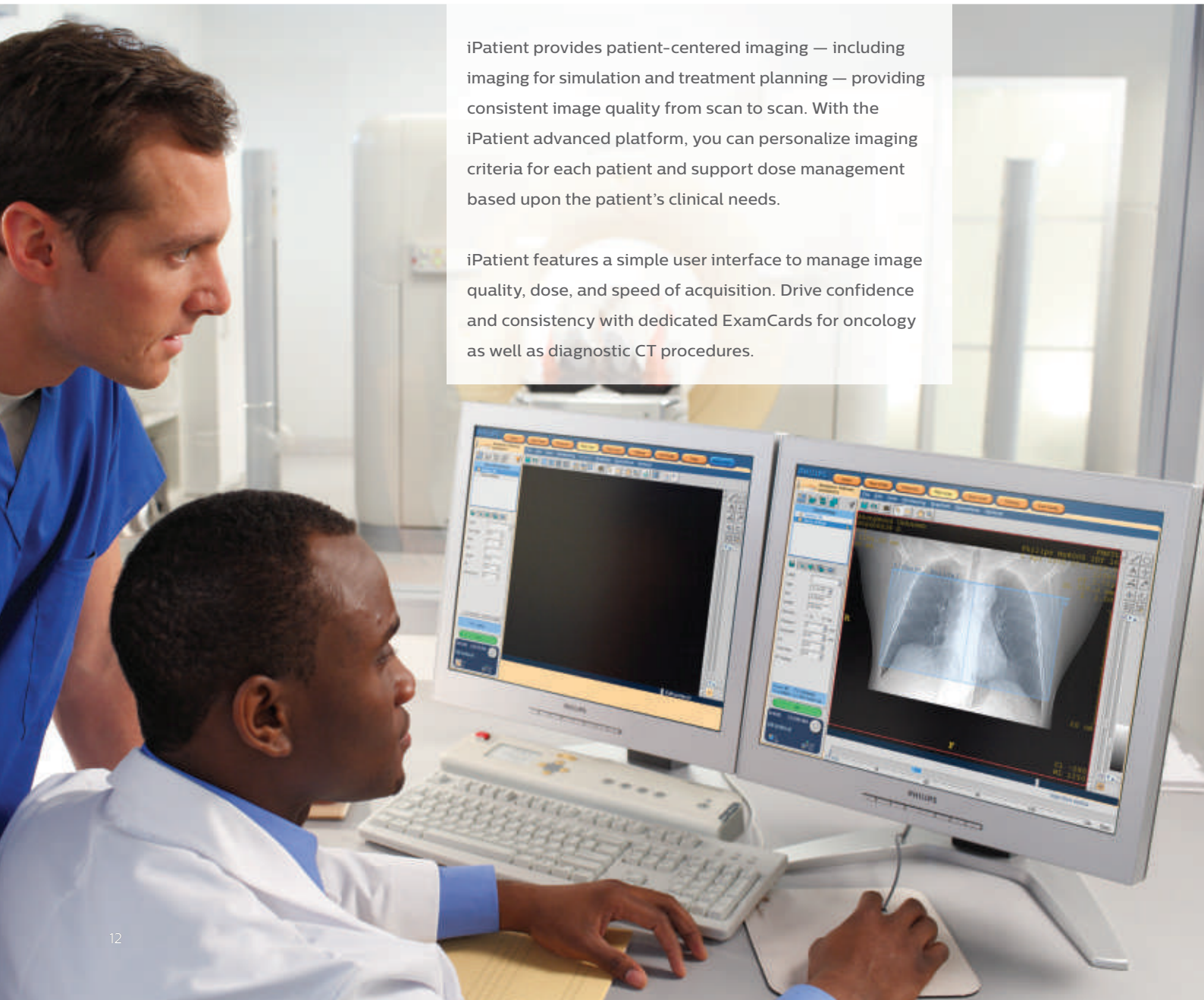
O-MAR metal artifact reduction

Artifacts from large metal objects, such as orthopedic implants, can be problematic, making it very difficult and time-consuming to generate contours of critical structures and target volumes. O-MAR improves image quality and visualization of critical structures and target volumes.

- O-MAR is automatic and is performed in conjunction with normal image reconstruction, providing comparison of image data with and without O-MAR for clinician review
- O-MAR improves workflow in simulation and treatment planning with enhanced visualization of anatomic structures where metal from large orthopedic implants is present

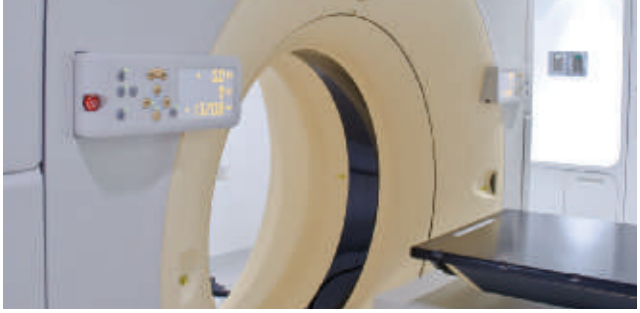
Focus on the **patient**

Workflow powered by iPatient



iPatient provides patient-centered imaging — including imaging for simulation and treatment planning — providing consistent image quality from scan to scan. With the iPatient advanced platform, you can personalize imaging criteria for each patient and support dose management based upon the patient's clinical needs.

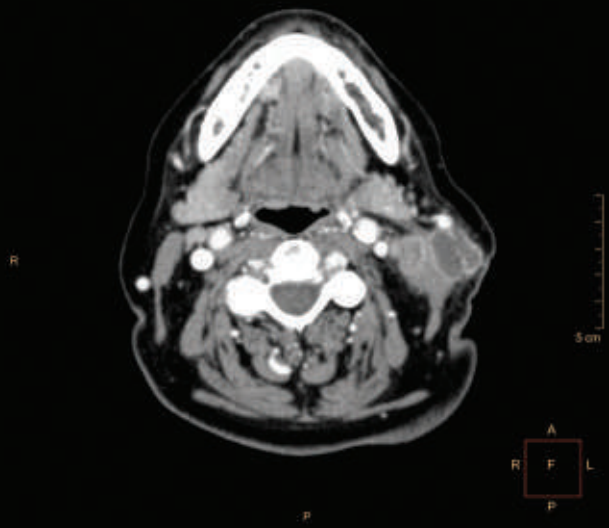
iPatient features a simple user interface to manage image quality, dose, and speed of acquisition. Drive confidence and consistency with dedicated ExamCards for oncology as well as diagnostic CT procedures.



Clinical cases

Head-neck cancer

Scan parameters
120 kVp • 489 mAs • Scan length – 192 mm • $CTDI_{vol}$ – 28.4 mGy
DLP – 545.3 mGy*cm • Effective dose – 1.7 mSv (k = 0.0031*)

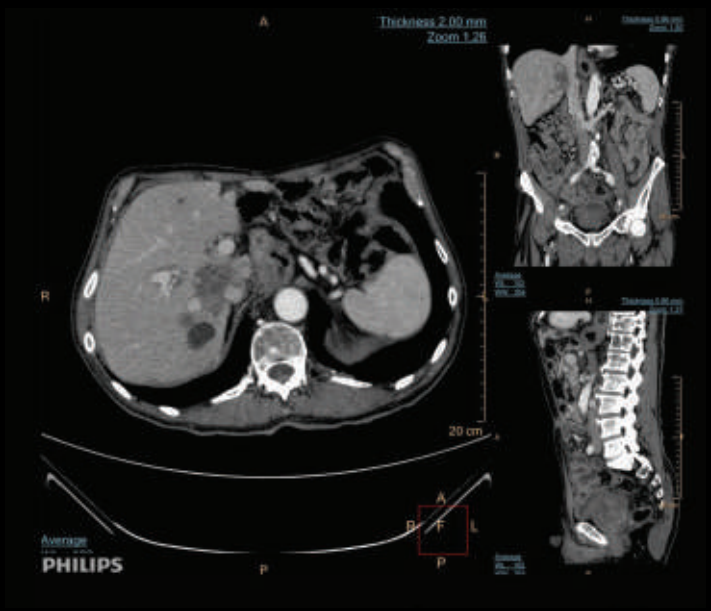


* AAPM Technical Report 96.

Clinical cases

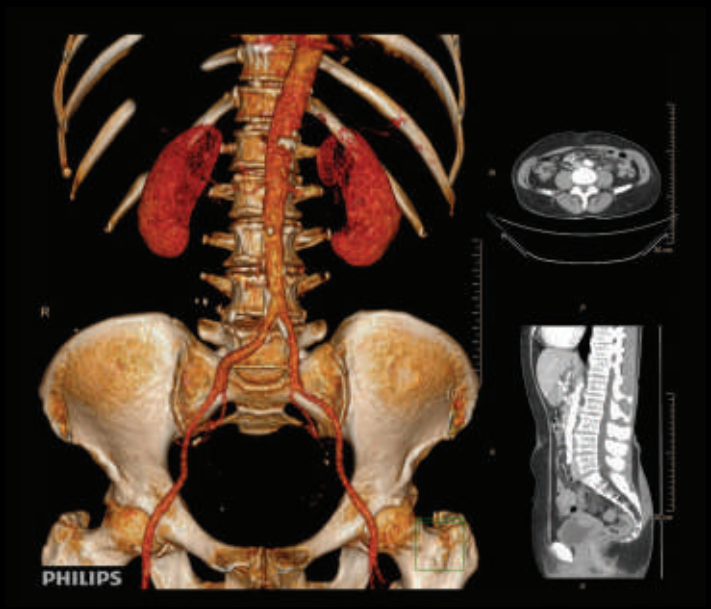
Thorax with contrast: liver lesions

Scan parameters
120 kVp • 275 mAs • Scan length – 635.0 mm • $CTDI_{vol}$ – 16.5 mGy
DLP – 1047.7 mGy*cm • Effective dose – 15.7 mSv (k = 0.015*)



CTA

Scan parameters
120 kVp • 278 mAs • Scan length – 435.5 mm • $CTDI_{vol}$ – 19.8 mGy
DLP – 862.3 mGy*cm • Effective dose – 12.9 mSv (k = 0.015*)



*AAPM Technical Report 96.

PE chest

Scan parameters
120 kVp • 213 mAs • Scan length – 350.0 mm • iDose⁴ level – Level 3
$CTDI_{vol}$ – 17.2 mGy • DLP – 482.4 mGy*cm • Effective dose – 6.7 mSv (k = 0.014*)

Take the **SmartPath**

Enhancing the capabilities of your existing Philips family scanners.

Optimize your system's performance both now and in the future with regular and ongoing updates, including functionality improvements and remote technical support.

Enhance your equipment with regular technology upgrades, and take advantage of the newest features and capabilities.

Transform your investment at the end of your system's life by transitioning seamlessly to a next-generation solution or refurbished option.

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