



PHILIPS

Computed tomography

High
performance
no trade-offs

Philips Ingenuity CT family

Keeping you ahead

Until now, CT scanning has too often been about trade-offs. You've been forced to choose between high image quality and low dose. Between an iterative reconstruction technique and speed. Well, no longer. The Ingenuity family offers solutions that deliver high performance with virtually no trade-offs, with advances such as the iDose⁴ Premium Package and iPatient, which puts you in control of innovative workflow solutions. Philips continues to lead in CT detector design with the NanoPanel Elite – our latest tile-detector technology – that has been re-engineered for low-noise, high-fidelity imaging. And with the IMR option, Ingenuity offers industry-leading low-contrast resolution and virtually noise-free image quality. The fully upgradeable Ingenuity family allows for customization now and the flexibility to grow with you.

Clinical integration and collaboration

- Confidence and consistency 24/7 with iPatient
- Deliver appropriate contrast dose and consistent image quality with SyncRight
- Industry-leading low-contrast resolution with IMR

Patient focus

- Low dose and high image quality with the iDose⁴ Premium Package
- Improved visualization in the presence of large metal orthopedic implants
- NanoPanel Elite detector for marked image noise improvement

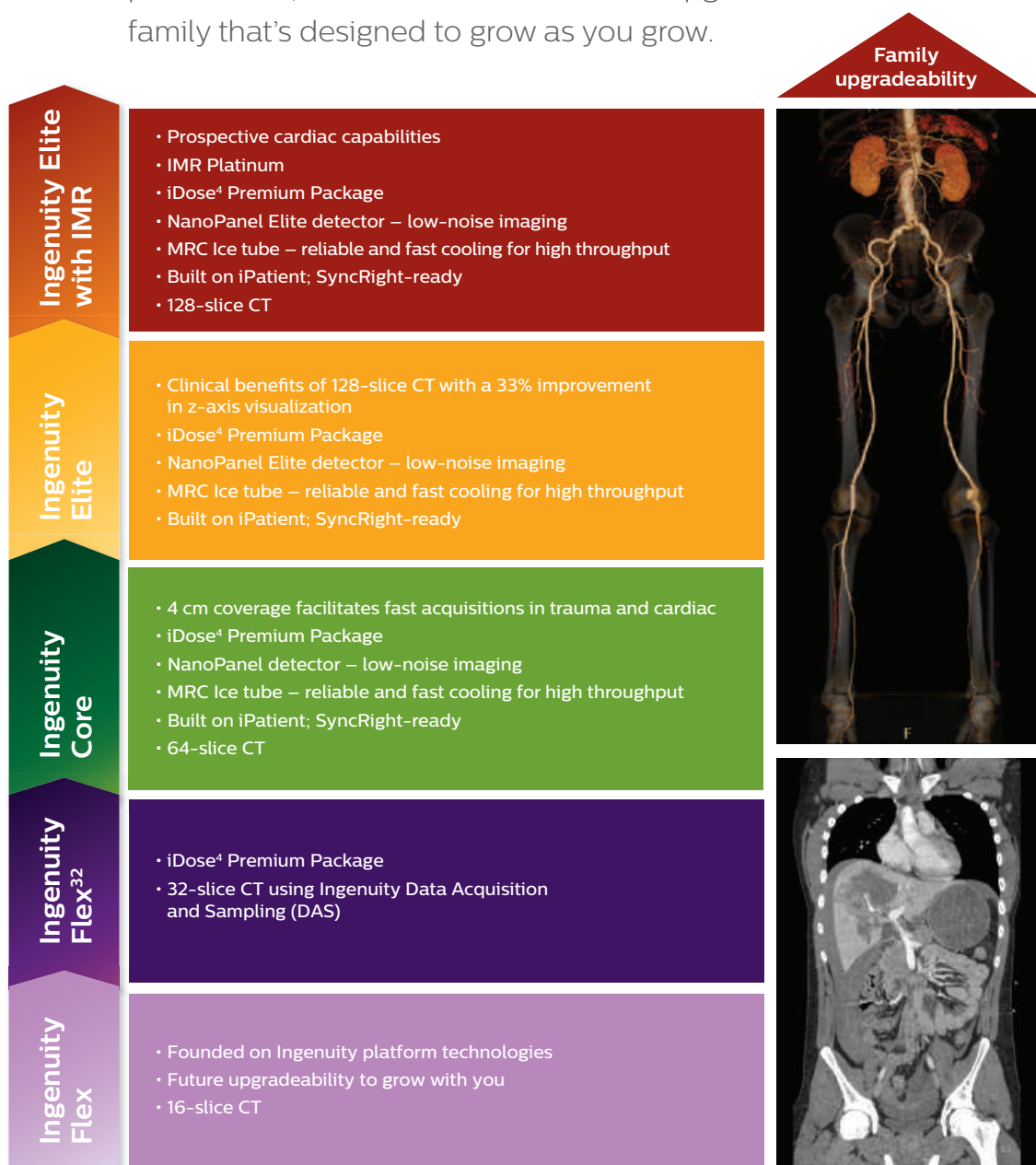
Improved economic value

- Majority of reference protocols reconstructed with iDose⁴ in less than a minute
- Family upgradability
- Begin reading early with IntelliSpace Portal preprocessing



A family of confidence

Philips brings you the benefits of high-resolution, low-dose scanning with increased integration and collaboration, patient care, and economic value in an upgradable family that's designed to grow as you grow.



Note: system configurations and optional features may vary by region, price, and availability.

Driving scan-to-scan consistency

Philips iPatient is an advanced platform that puts you in control of enhancing your CT system today while getting you ready for the challenges of tomorrow.

Ingenuity workflow powered by **iPatient**

Focus on the patient

When you're truly in control, new opportunities can emerge. In control means a multitude of ways to facilitate patient-centered imaging. It means that although every day may be different, you're confident the results can be consistent. It's having the knowledge to define what you need in terms of image characteristics, and allows you to adjust the settings automatically.

While you're working to boost return on investment now, you're also accessing a flexible platform that will support future innovations.

Personalize your control with iPatient and IMR

No two patients are identical, and truly focusing on the patient requires the ability to personalize your control. This means consistently achieving high image quality and managing dose appropriately every day. When iPatient and IMR work together, you have new methods that facilitate patient-specific dose management and increased diagnostic confidence.

iPatient key benefits

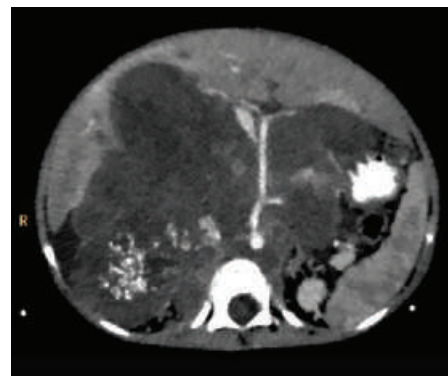
- Plan the results, not the acquisition
- Patient-specific methods facilitate optimal** management of image quality and radiation dose
- Up to 24%* faster time-to-results
- Up to 66%* fewer clicks
- SyncRight – facilitates delivering appropriate contrast dose with CT/injector integration
- Enables advanced capabilities such as IMR and future technologies
- Confidence and consistency 24/7 with iPatient

* In a study done using multiphasic liver CT exams, the iPatient software platform reduced time-to-results by 24% and clicks per exam by 66%. Impact of workflow tools in reducing total exam and user interaction time – four-phase liver computed tomography exams. Nicholas Ardley, Southern Health; Kevin Buchan, Philips Healthcare; Ekta Dharaiya, Philips Healthcare.

** Optimal refers to the use of strategies and techniques that facilitate the management and control of both image quality and dose.

Industry-leading low-contrast resolution using IMR

Philips IMR sets a new direction in CT image quality with virtually noise-free images, unlocking significant image quality benefits combined with significantly lower doses.* This improvement is a breakthrough made possible through Philips first iterative reconstruction technique built on knowledge-based models. IMR gives you confidence through enhanced visualization of fine detail and improved accuracy.



- Applicable for advanced gated modes[†]
- Majority of reference protocols < 3 min recon[†]
- IMR is an available option on new and existing Ingenuity CT family scanners.**[†]



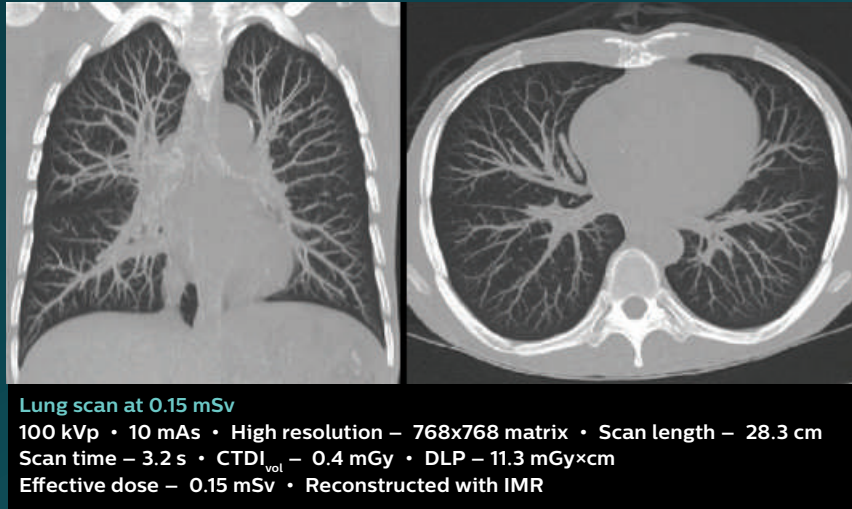
* In clinical practice, the use of IMR may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. Lower image noise, improved spatial resolution, improved low-contrast detectability, and/or dose reduction were tested using Reference Body Protocol. All metrics were tested on phantoms. Dose reduction assessments were performed using 0.8 mm slices, and tested on the MITA CT IQ Phantom (CCT183, The Phantom Laboratory), using human observers. Data on file.

** Additionally, IMR is available as an upgrade to the Ingenuity CT scanner (Core and above).

[†] Requires IMR Platinum.

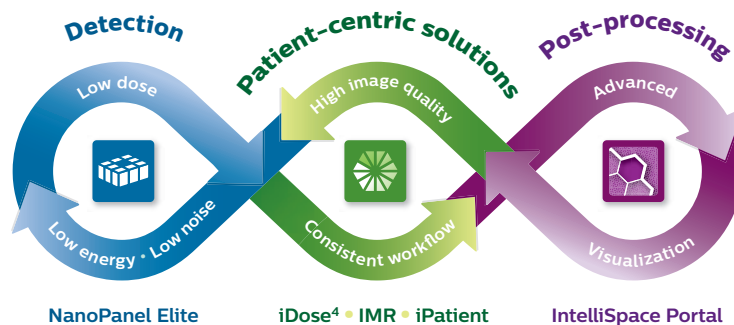
An Elite level of CT imaging

Keep the “lows” low and your quality high.



Low dose, low energy, low noise – outstanding results.

The Ingenuity Elite configuration balances innovative technologies that enhance the entire imaging chain and uphold patient-centric clinical excellence. From the NanoPanel Elite – engineered for low-dose, low-energy, and low-noise imaging – to iPatient that puts you in control of innovative workflow solutions, the Ingenuity Elite is in a class of its own. And it features IMR, making it the only workhorse scanner to offer industry-leading low-contrast resolution and virtually noise-free image quality.



New NanoPanel Elite

Continuing our leadership in meaningful innovations that provide low dose, low energy and low noise with outstanding results, Philips CT is pleased to announce the Ingenuity Elite. The foundation of the Ingenuity Elite is the NanoPanel Elite – engineered for low-dose, low-energy, and low-noise imaging.

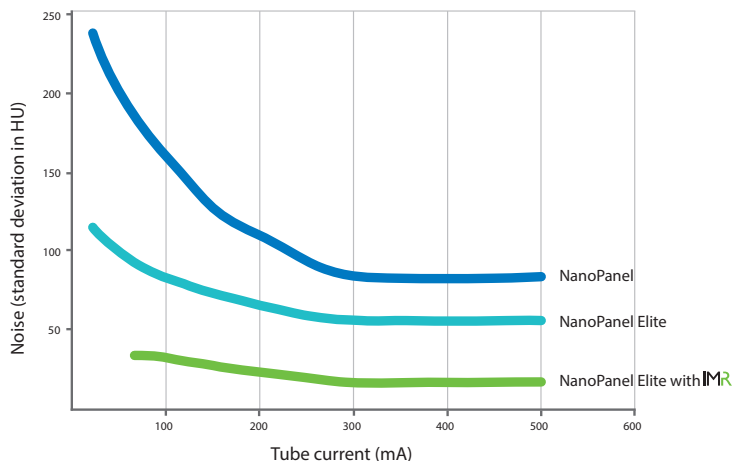


Image noise measured in a 40 cm water phantom at low energy (80 kVp). Introduced in 2007, Philips NanoPanel demonstrated less noise than prior-generation detectors. The NanoPanel Elite continues to set the pace in CT detector technology by demonstrating further improvements in image noise at low energy, an even more impressive accomplishment. This low-noise performance is further enhanced when combined with IMR.

Elite detector technology

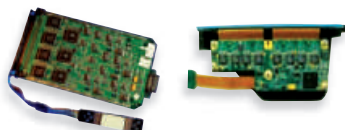
- Reduces image noise at low energy and low dose
- Direct integration technology
- Miniaturization and integration provide low-noise, high-fidelity signal
- Marked image noise improvement

Philips was first to bring integrated, modular CT tile detector technology to the market in 2007. With thousands of NanoPanel-based systems installed globally, Philips continues to lead in CT detector design with the introduction of the NanoPanel Elite – our latest tile detector and a 4th-generation solid-state detector.

Detector innovation

1998

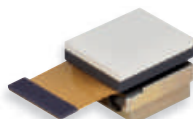
Traditional detector technology



2002

2007

NanoPanel iCT and Ingenuity families



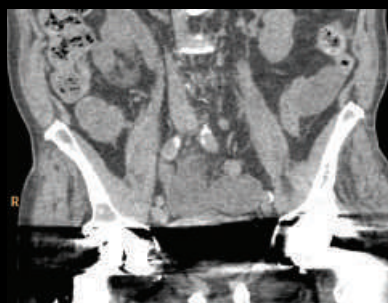
2013

NanoPanel Elite

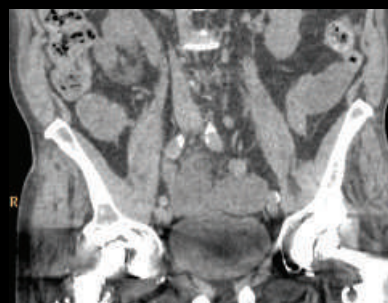


iDose⁴ Premium Package

The Ingenuity family features the iDose⁴ Premium Package, which includes two leading technologies that can improve image quality: iDose⁴ and metal artifact reduction for large orthopedic implants (O-MAR). iDose⁴ 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.



iDose⁴ and O-MAR off



iDose⁴ and O-MAR on



2.5 mSv chest abdomen and pelvis
Exceptional image quality, low energy CAP exam; 59.5 cm, 80 kVp, 135 mAs
reconstructed with iDose⁴ Level 3.

iDose⁴ – under a minute

Philips iDose⁴ gives you control of the dial so you can personalize image quality based on your patients' needs at low dose. The majority of reference protocols are reconstructed in under a minute while using iDose⁴. When used in combination with the advanced technologies of the Ingenuity CT family, this provides a unique approach to managing important factors in patient care – low energy, low dose, and low injected contrast imaging.

If it's fast, it's Philips.

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

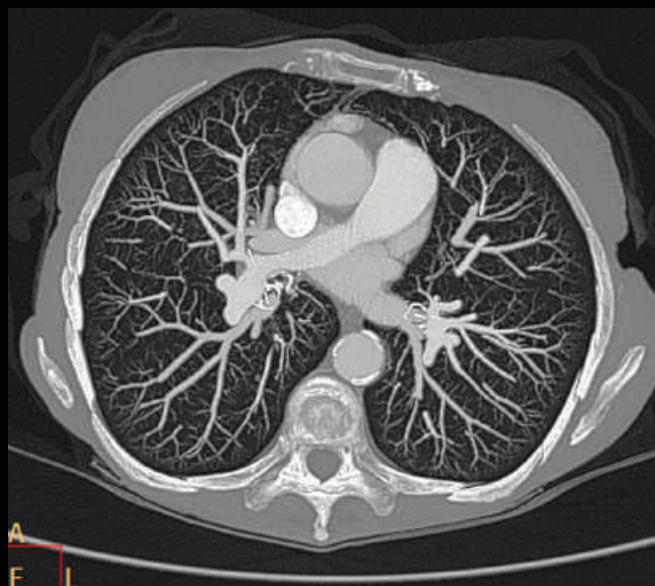
Clinical case study collection

Low dose, low energy chest CTA

High spatial resolution allows the visualization of submillimeter pulmonary vessels.

Scan parameters

80 kVp • 91 mAs • Scan length – 32.0 cm • iDose⁴ – Level 3 • CTDI_{vol} – 1.7 mGy
DLP – 66.5 mGy*cm • Effective dose – 0.9 mSv (k = 0.014*)



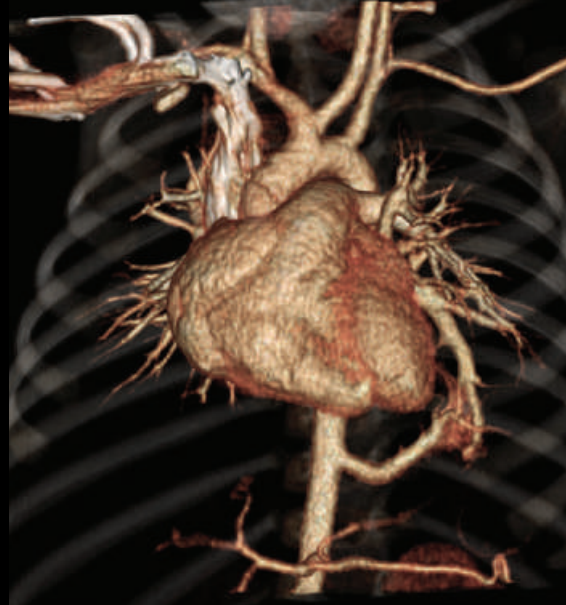
* AAPM Technical Report 96.

Sub-mSv pediatric cardiopulmonary assessment

Low-dose acquisition shows pulmonary sequestration in the left-lower lobe; segment supplied by systemic artery from the descending aorta.

Scan parameters

80 kVp • 59 mAs • Scan length – 14 cm • iDose⁴ – Level 4
CTDI_{vol} – 1.0 mGy • DLP – 19.7 mGy*cm
Effective dose – 0.5 mSv ($k = 0.026^*$)

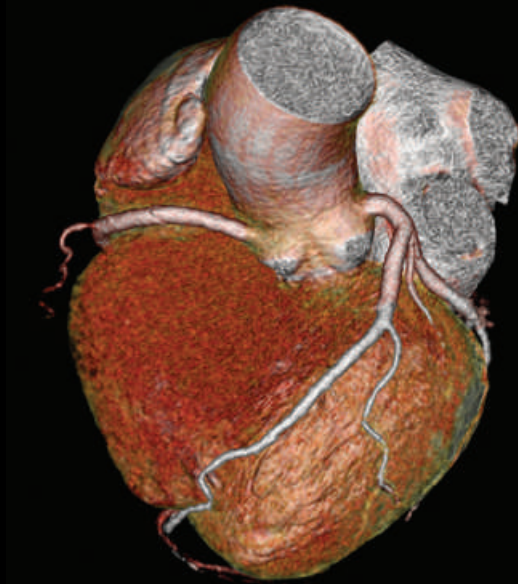
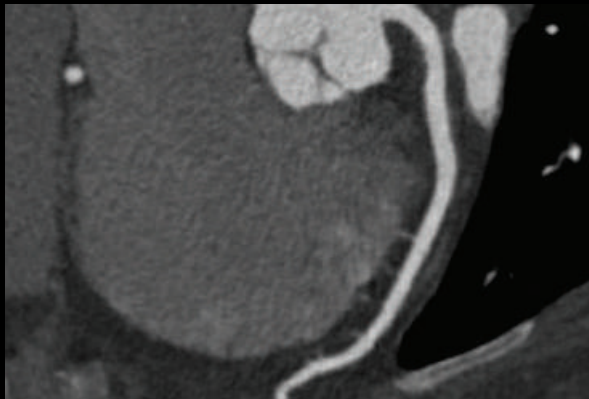


Step & Shoot Cardiac

Low-energy, low-dose Step & Shoot Cardiac to rule out coronary artery disease.

Scan parameters

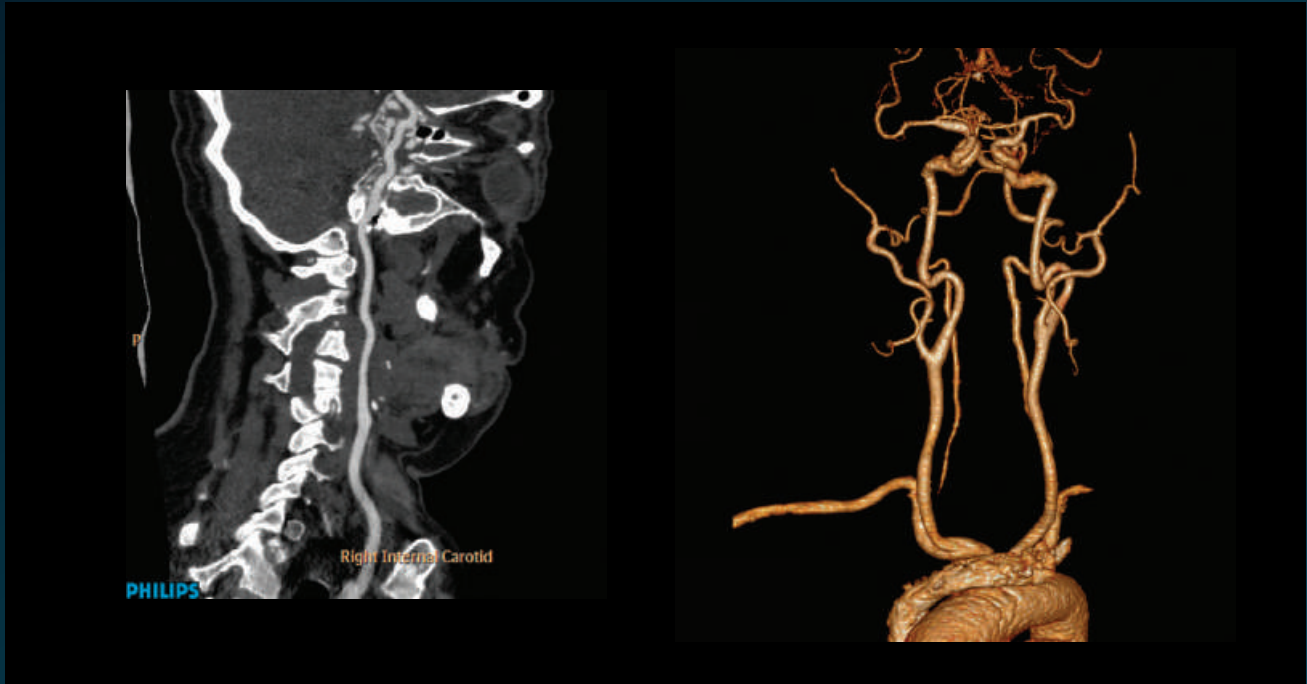
100 kVp • 108 mAs • Scan length – 16 cm • iDose⁴ – Level 3 • CTDI_{vol} – 8.8 mGy • DLP – 130.5 mGy*cm
Effective dose – 1.8 mSv ($k = 0.014^*$) • Heart rate – 52 bpm



* AAPM Technical Report 96.

0.9 mSv carotid and Circle of Willis CTA using 100 kVp and iDose⁴

Advanced Vessel Analysis software on the IntelliSpace Portal increases diagnostic confidence by isolating the vascular structures with limited user interaction. 320 mAs and 33 cm scan length.

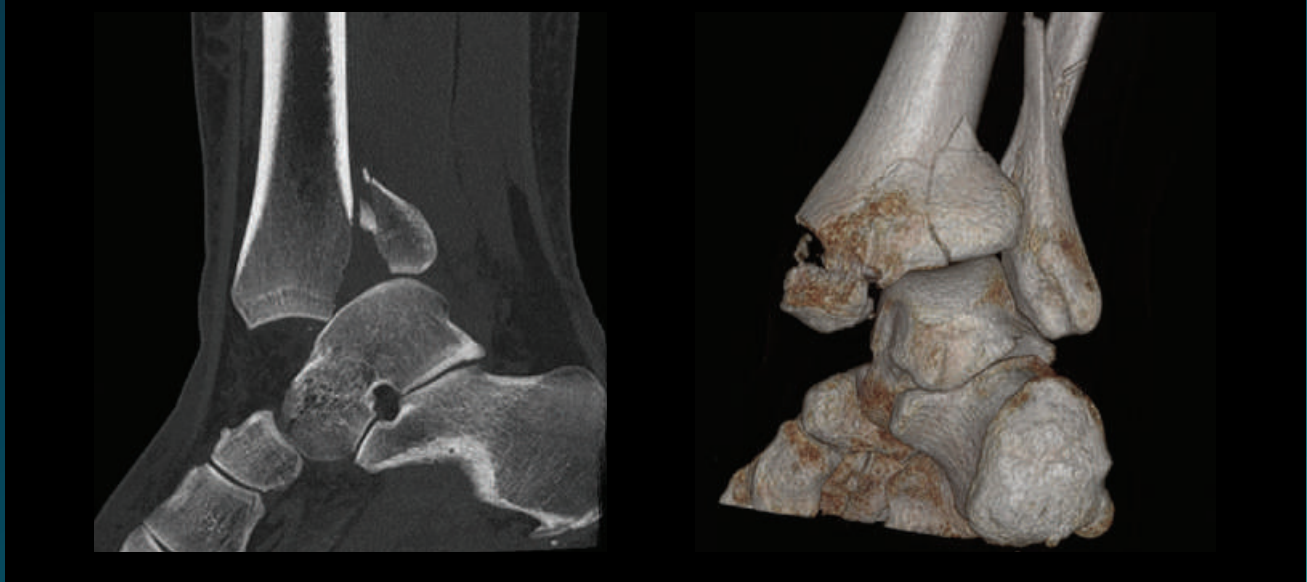


High-resolution visualization of ankle fracture

High-resolution acquisition and visualization of ankle fractures and abnormalities demonstrating the benefits of increased-matrix-size reconstruction.

Scan parameters

120 kVp • 100 mAs • Scan length – 15 cm • iDose⁴ – Level 3 • CTDI_{vol} – 6.5 mGy • DLP – 99.5 mGy*cm
Effective dose – 1.5 mSv (k = 0.015*) • Reconstruction matrix – high-resolution, 768²



* AAPM Technical Report 96.

Circle of Willis CTA, 0.4 mSv

Excellent contrast resolution demonstrated on a 80 kVp neuro CTA. 300 mAs, iDose⁴ Level 4, and 16 cm scan length.



Lung Nodule Assessment

Ingenuity Core¹²⁸ with iDose⁴ improves spatial resolution to help with small nodule identification and measurement. Lung Nodule Assessment on the IntelliSpace Portal facilitates tracking of small changes in lung nodule volume over time.

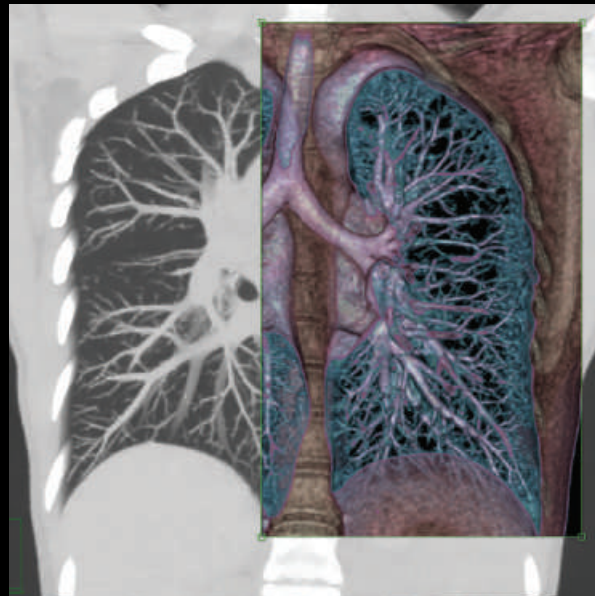
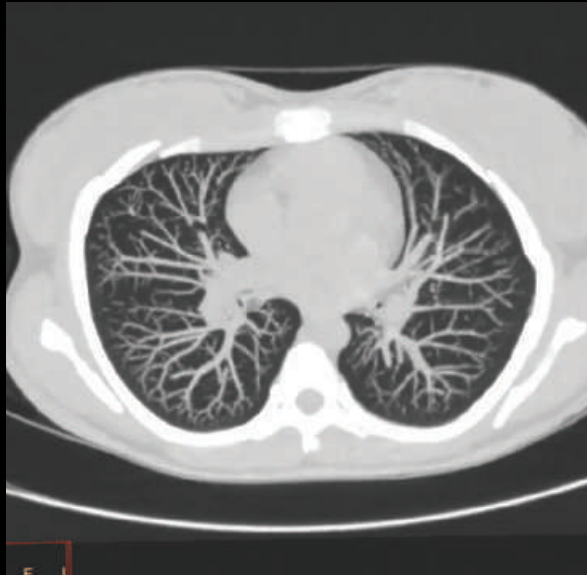


IMR non-contrast pulmonary imaging

IMR significantly improves spatial resolution* while simultaneously reducing noise**. This allows increased visualization of small structural detail. IMR images demonstrate outstanding visualization of small details.

Scan parameters

100 kVp • 10 mAs • Scan length – 28.3 cm • Scan time – 3.2 s • CTDI_{vol} – 0.4 mGy
DLP –11.3 mGy•cm • Effective dose – 0.15 mSv



* Spatial resolution as defined by high-contrast spatial resolution.
** Image noise as defined by IEC standard 61223-3-5.

* AAPM Technical Report 96.

Appropriate contrast dose and consistent **image quality** with SyncRight

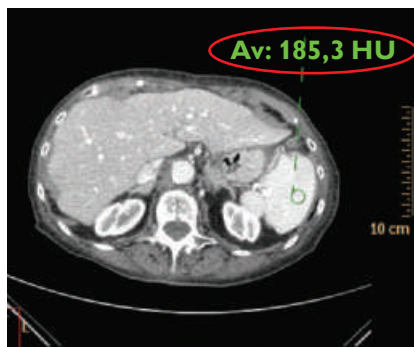
In today's environment of high-throughput CT scanning, contrast injections are typically set manually. Because of this, many sites have adopted a single injection protocol. The Philips CT SyncRight option enables easy and efficient communication between the CT system and the injector in order to facilitate delivering appropriate contrast dose and consistent image quality.

As shown in the example on the top without SyncRight, the same injection protocol was used on two different patients at two different weights (48 kg and 117 kg). The result is inconsistent image quality as noted visually by the bright arterial, early phase enhancement of the liver on the smaller patient and a Hounsfield Unit (HU) of approximately 185. On the larger patient very little arterial enhancement is seen and a HU of approximately 99.

In the SyncRight example on the bottom, there are two different patients similar in size (43 kg and 125 kg) to the case above. In this case, SyncRight has calculated a patient-specific injection protocol resulting in consistent image quality, even though the larger patient is almost three times the size of the smaller. HU is now approximately 130 for the smaller patient and approximately 126 for the larger patient.

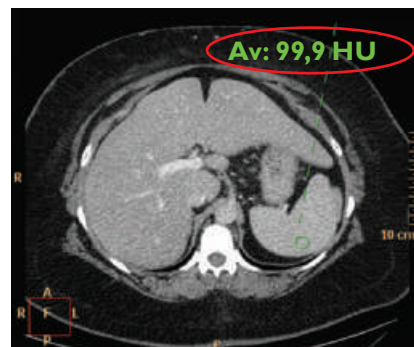
Without SyncRight

120 cc @ 2.5 cc/sec



48 kg, 1m58: BMI = 19.2

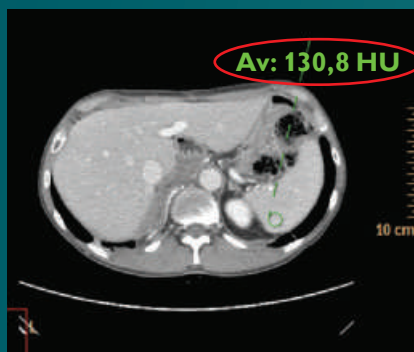
120 cc @ 2.5 cc/sec



117 kg, 1m60: BMI = 45.7

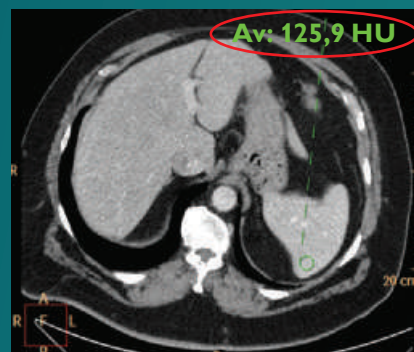
With SyncRight

97 cc @ 2.0 cc/sec



43 kg, 1m58: BMI = 17.2

143 cc @ 3.0 cc/sec



125 kg, 1m65: BMI = 45.9

Connecting you to more

Designed for a lifetime of value, the Ingenuity CT family is able to offer clinical integration with HIS/RIS, IntelliSpace Portal, PACS, iPatient, SyncRight, and other technologies.

Real-time radiology

The IntelliSpace Portal option provides a true multimodality, multi-vendor, and multi-user workspace that facilitates a high level of collaboration among radiologists and referring physicians while streamlining imaging workflow.

- Advanced visualization anytime, virtually anywhere, gives access to information to increase diagnostic confidence
- Thin-client architecture that makes image data and applications available for CT, MR, and AMI images
- Tooling to allow easy communication among clinicians of advanced visualization results

The IntelliSpace Portal allows easy communication and collaboration.

We've got you covered

The excellent uptime of the Ingenuity CT family is also due in part to proactive monitoring and visual diagnostics, which allow us to address issues quickly for our customers.

Remote means we're closer and quicker. Philips Remote Services have been smartly engineered to automatically probe your scanner in order to address problems before they occur, help reduce disruption, and keep your workflow on track.

By proactively monitoring the health of your system, a service engineer can arrive at your site with the proper knowledge and parts to help reduce the critical time to repair.



Link to hospital information systems.



Leverage the IntelliSpace Portal.*

* Images are not for diagnosis except when using cleared software for mobile application.

Philips SmartPath provides you easy access to solutions and innovations for the full life of your computed tomography system, so you can boost your clinical and operational potential and achieve your organizational goals.



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.

The images and descriptions contained herein provide technical specifications and optional features which may not be included with the standard system configuration. Contact your local Philips Representative for a complete specific system details.

Some or all of the products, features, and accessories shown or described herein may not be available in your market. Please contact your local Philips Representative for availability.

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