

2026 BOSTON ORTHOPEDIC TECHNOLOGY SUMMIT

RESEARCH, INNOVATION, & SURGICAL ENTREPRENEURSHIP

SEE FACTOR CT3



James J. Yue, MD

Clinical Professor Frank H Netter School of Medicine

Orthopaedic Surgery

CT Orthopaedics

SAB Director Envigor8

Sanjeev Kaila, MD
CEO Enigor8



Outline

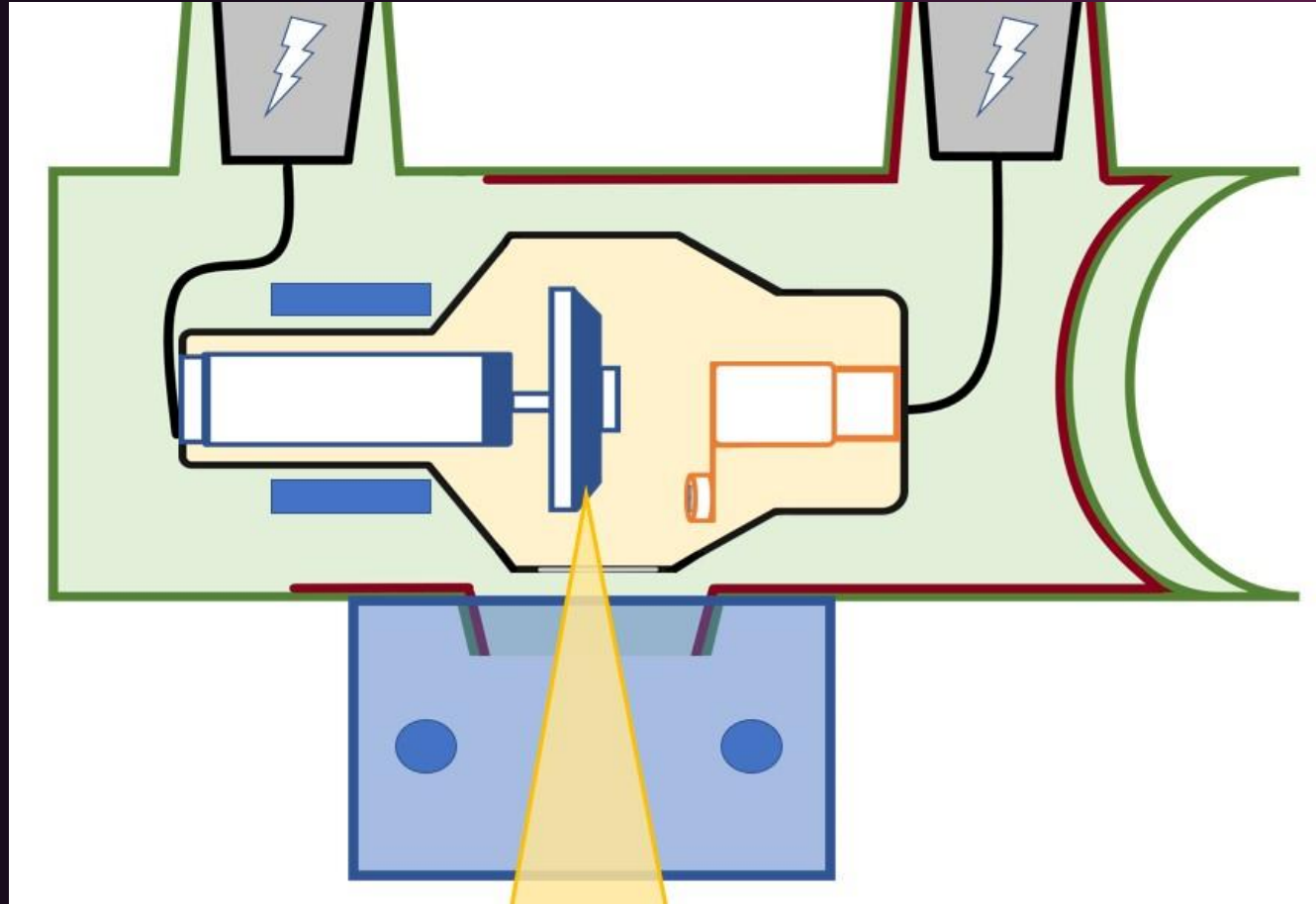
- Background current technology
- What are the current limitations with present day imaging?
- How does Envigor8's C Factor technology overcome these limitations
- Real World examples of Envigor8's C Factor technology
- Other ecosystem advances that will result from use of Envigor8's technology
- AI Integration

Nov 8, 1895 Roentgen discovers the x-ray photon

- Was studying cathode properties
- Form of electromagnetic radiation
- Very short wavelength
- Used wife's hand exposed to x-rays for 15 minutes
- Arthur Goodspeed U Penn in 1890 created the first x-ray but was unaware of its significance/utility

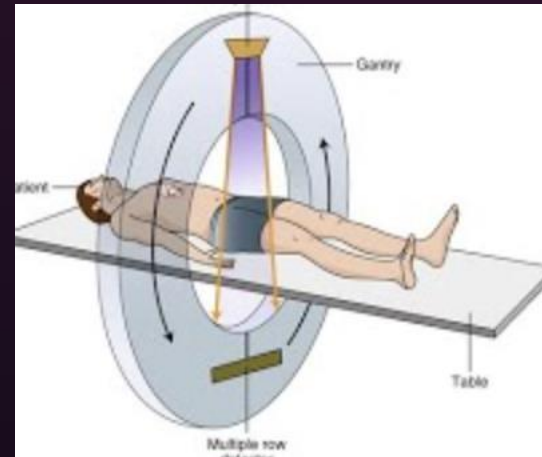


How are x-rays produced: High Voltage
needed 60,000—120, 000 Volts

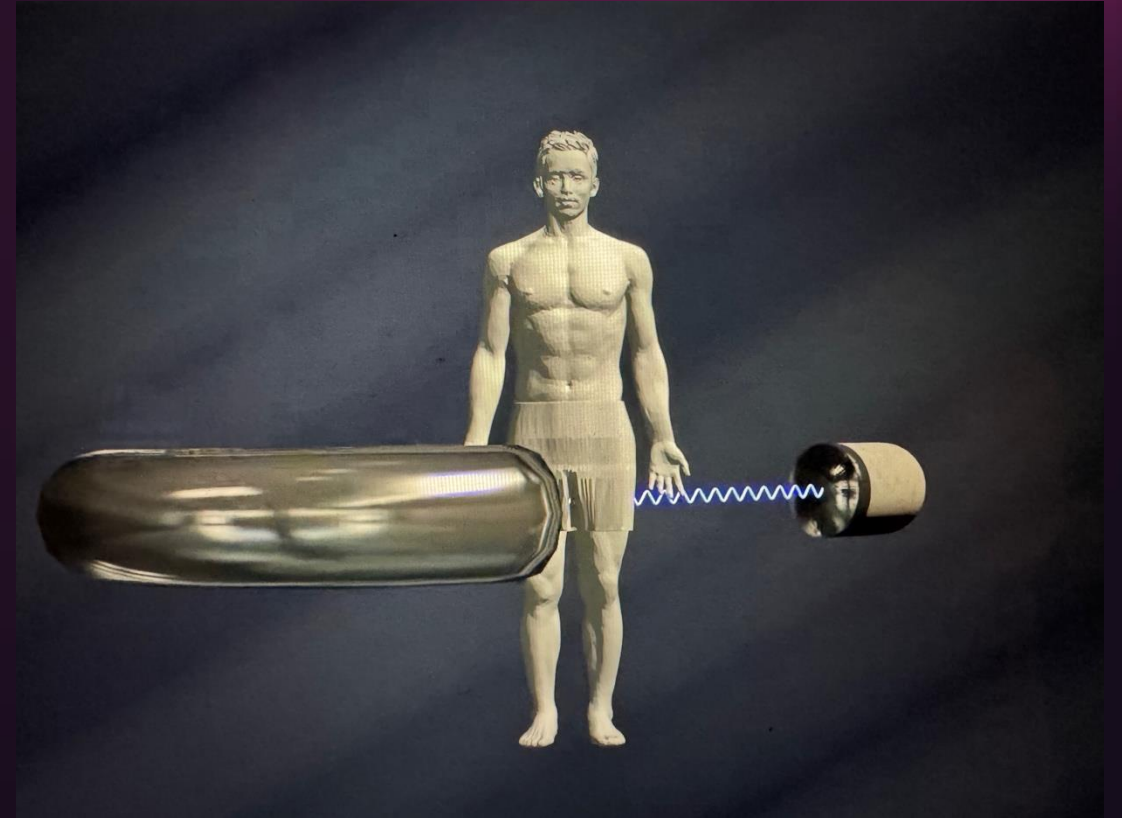
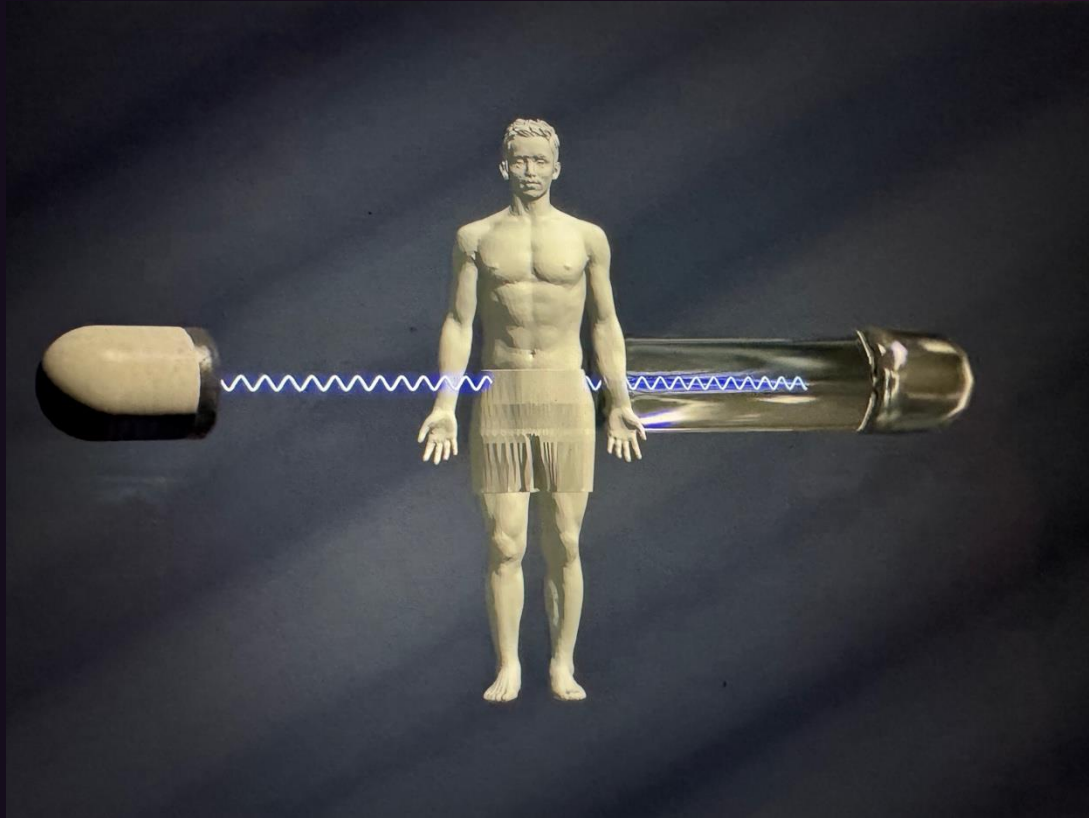


Current technology

- CT scan is based on the acquisition of hundreds of thin cut x-rays in different planes that are processed by a computer to make 2D and 3D images
- High voltage requirements
- Large physical machine



Based on a machine that uses a rotating X ray machine that spins around the body



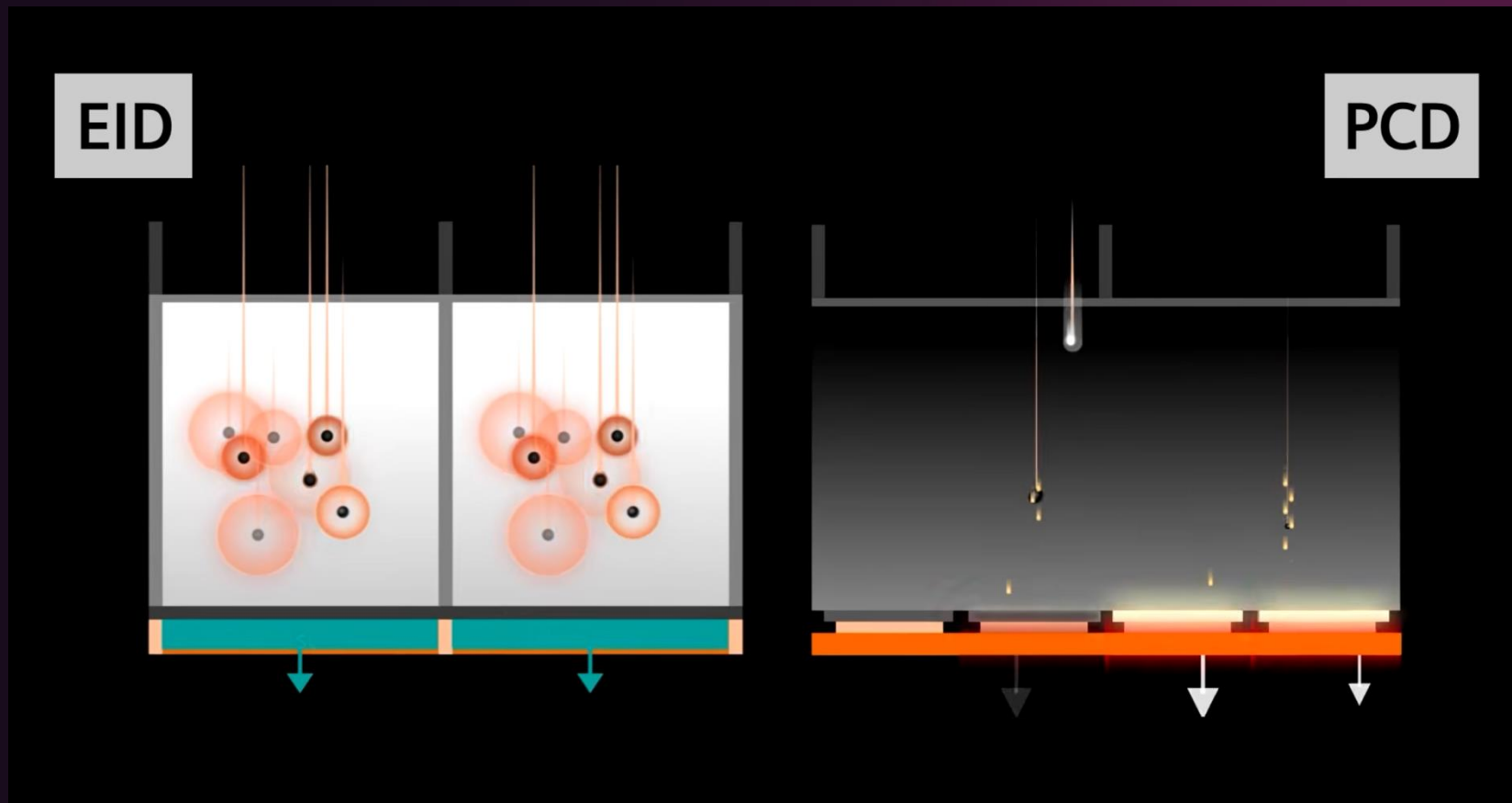
Clinical limitations

- Standard Clinical Practice: Data is reconstructed into 3-5mm slices to reduce digital noise and decrease acquisition time
- Conventional High End Scanners: 0.5mm-0.625mm (e.g. 128-640 slice models)
- Ultra High Resolution (PCCT): 0.2mm-0.25mm
- ALL BASED ON SLICES

Conventional versus Advanced CT scanners

Energy Integrating Detectors: Photons create light, Higher Dose radiation needed due to dead spaces above photo diodes

Photon Counting CT; Photon activates semiconductor creates electric signal, faster acquisition, each photon can be assessed individually



Dose of Radiation

Projected Lifetime Cancer Risks From Current Computed Tomography Imaging

Rebecca Smith-Bindman, MD^{1,2,3}; Philip W. Chu, MS¹; Hana Azman Firdaus, MPH¹; [et al](#)

[» Author Affiliations](#) | [Article Information](#)

Conclusions and Relevance This study found that at current utilization and radiation dose levels, CT examinations in 2023 were projected to result in approximately 103 000 future cancers over the course of the lifetime of exposed patients. If current practices persist, CT-associated cancer could eventually account for 5% of all new cancer diagnoses annually.

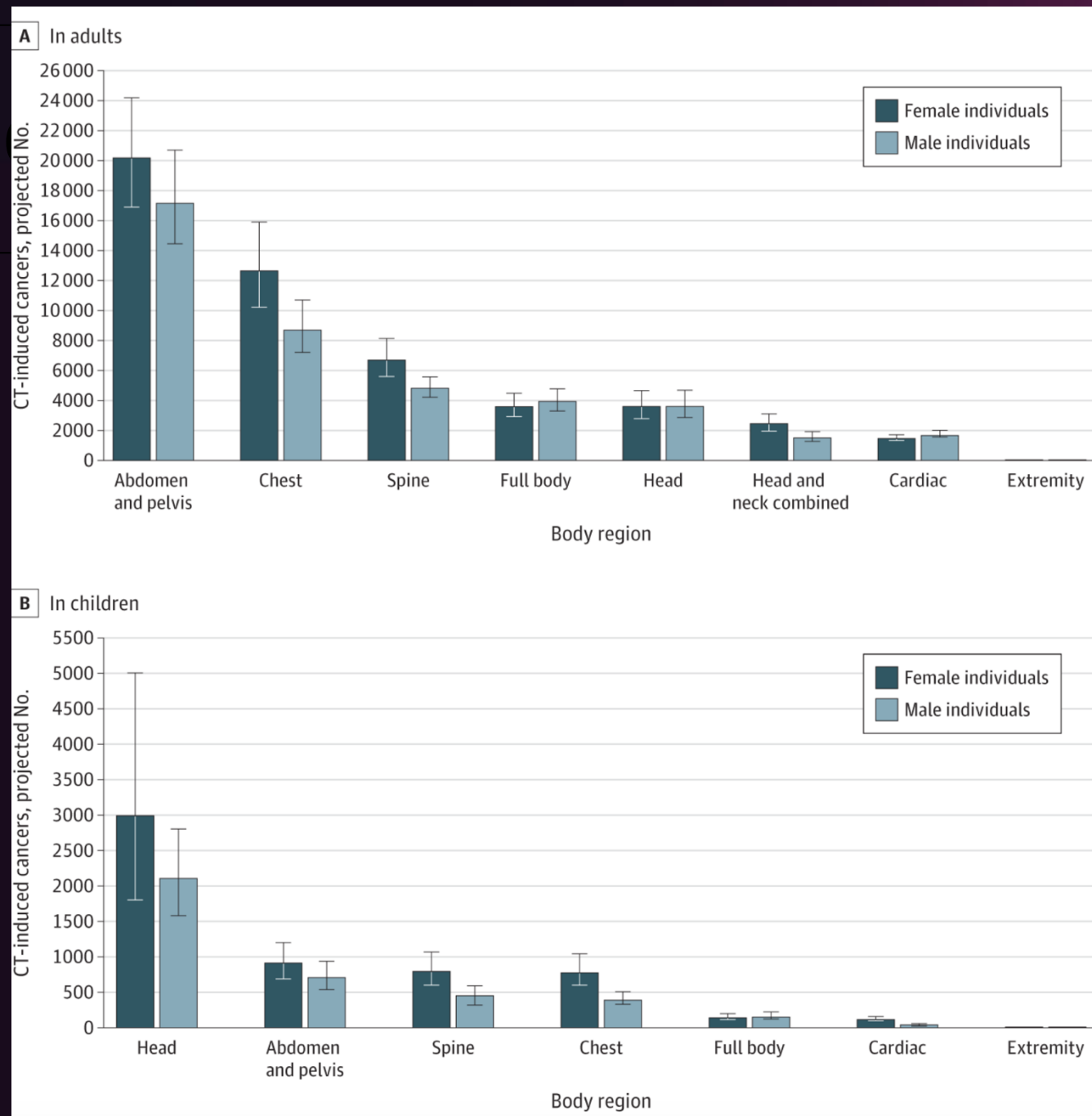
Diagnostic Procedure	Typical Effective Dose ^b (mSv) ^c	Equivalent No. of Single PA Chest Films
Conventional x-ray		
Chest (single PA film)	0.02	1
Pelvis	0.7	35
Abdomen	1.0	50
Lumbar spine	1.3	65
Barium enema	7	350
Computed tomography		
Head	2	100
Chest	8	400
Abdomen	10	500
Pelvis	10	500

^a = posteroanterior

^b Adapted in part from Wiest and colleagues⁴ standardized dose to compare risks

^c milli-Sievert—the standard unit of effective dose (equal to 0.1 rad)

Need to

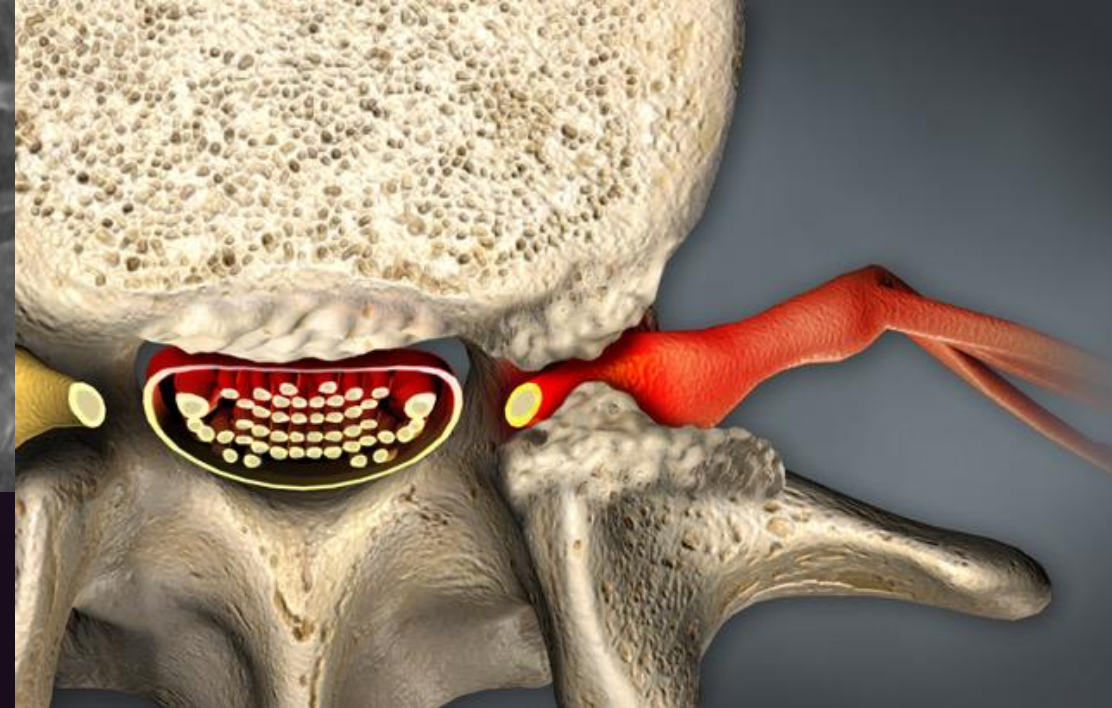
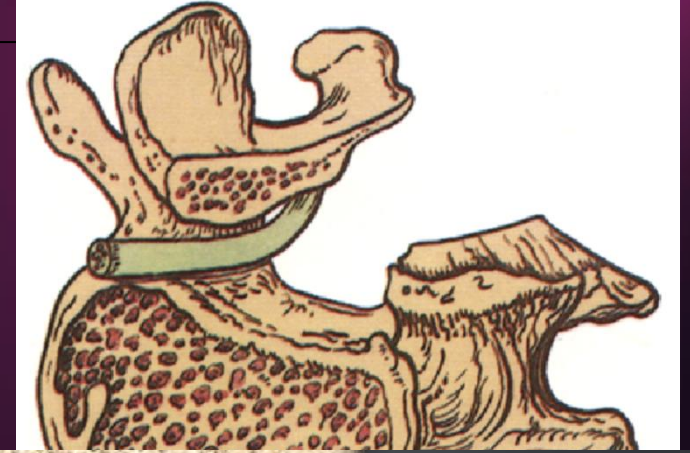


Can we improve Cost?

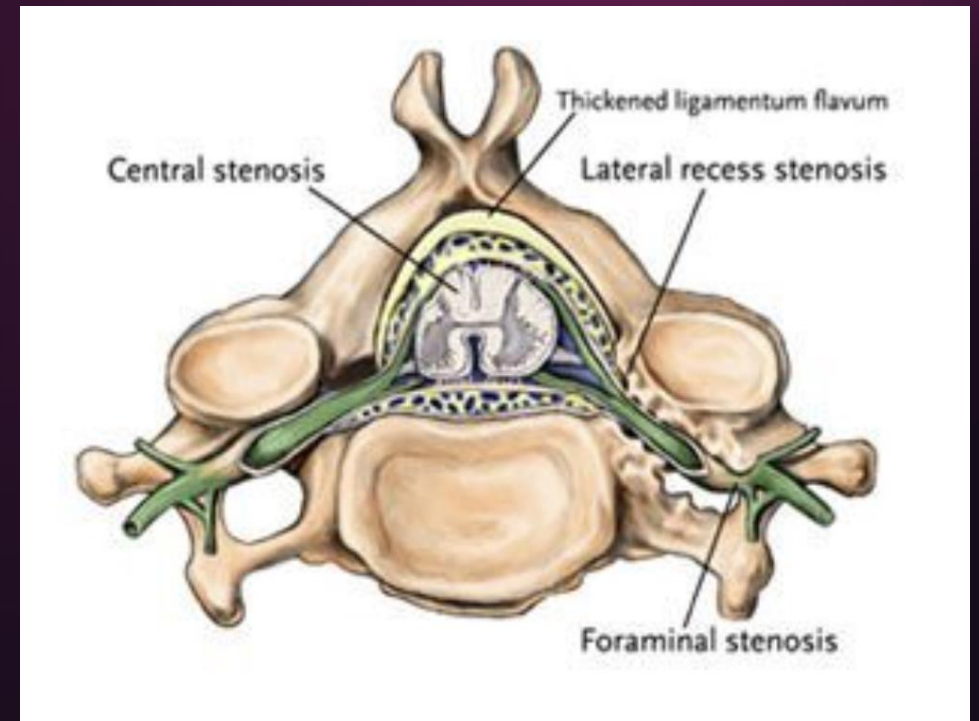
- The cost of a head, chest, abd, or pelvic CT is \$1,400-\$2,500 excluding radiology fee
- Abd and Pelvis CT scans are often grouped together: \$4,079

What are the clinical needs?

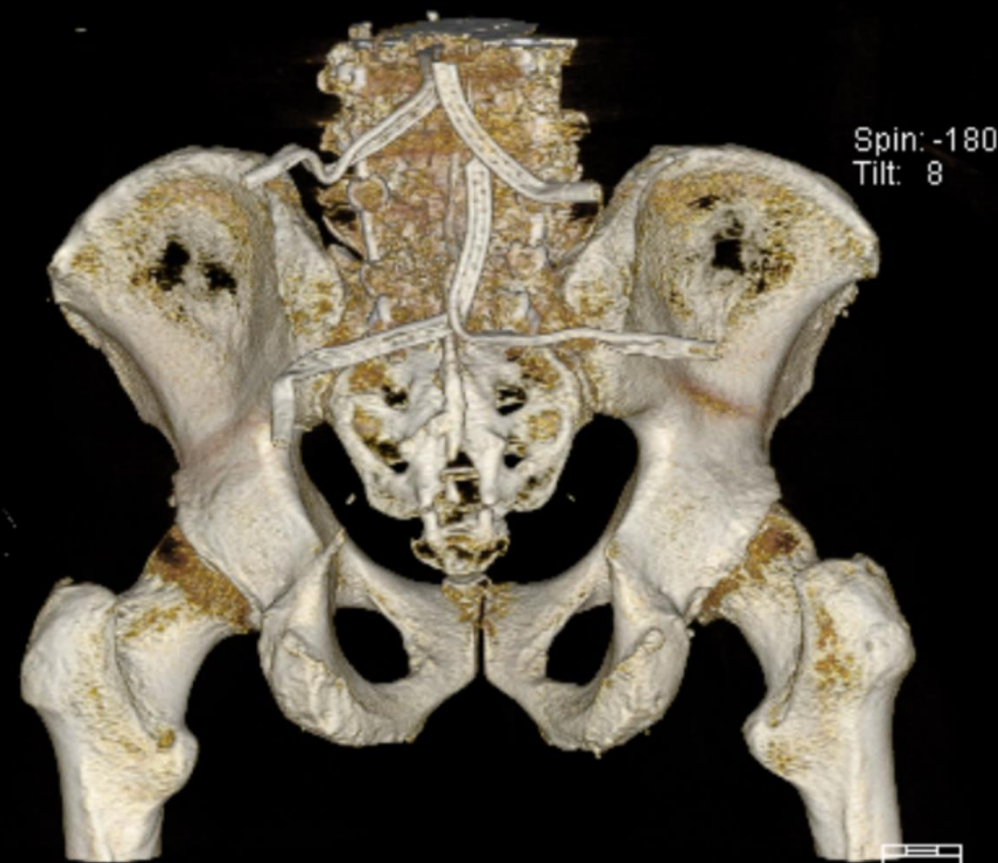
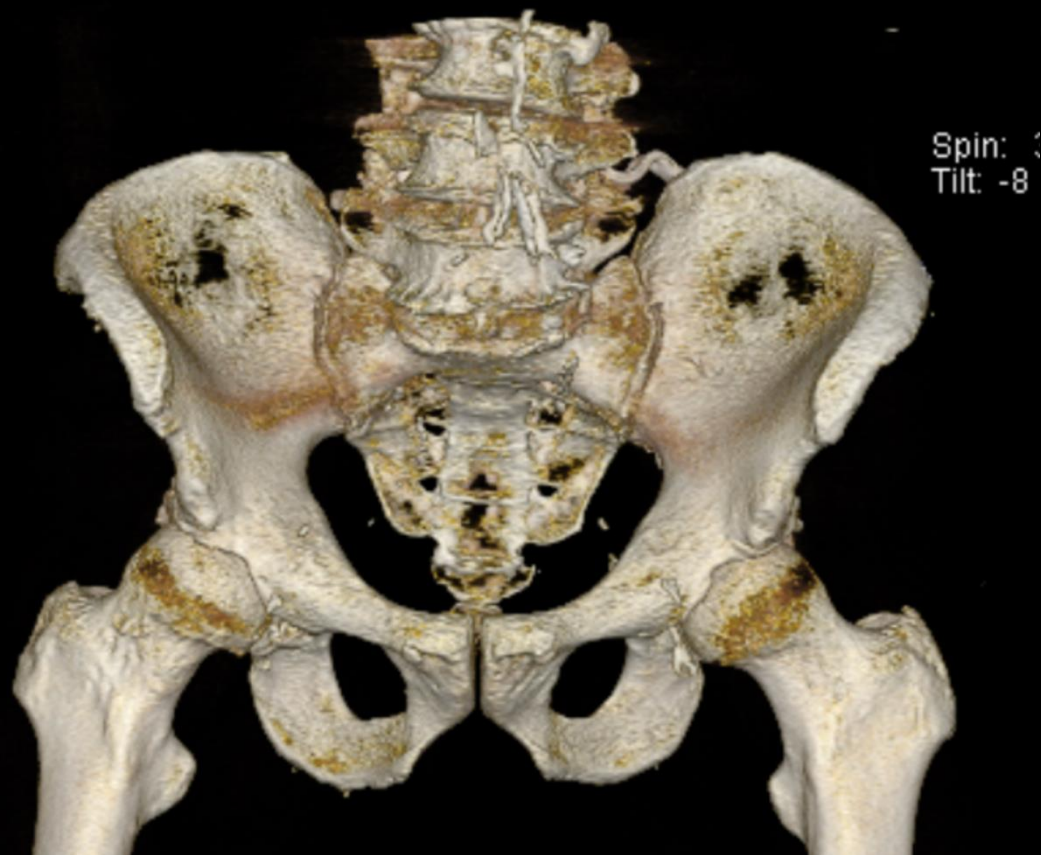
Clinical diagnostic limitations in Orthopaedic Surgery: Lumbar Spine lateral recess stenosis



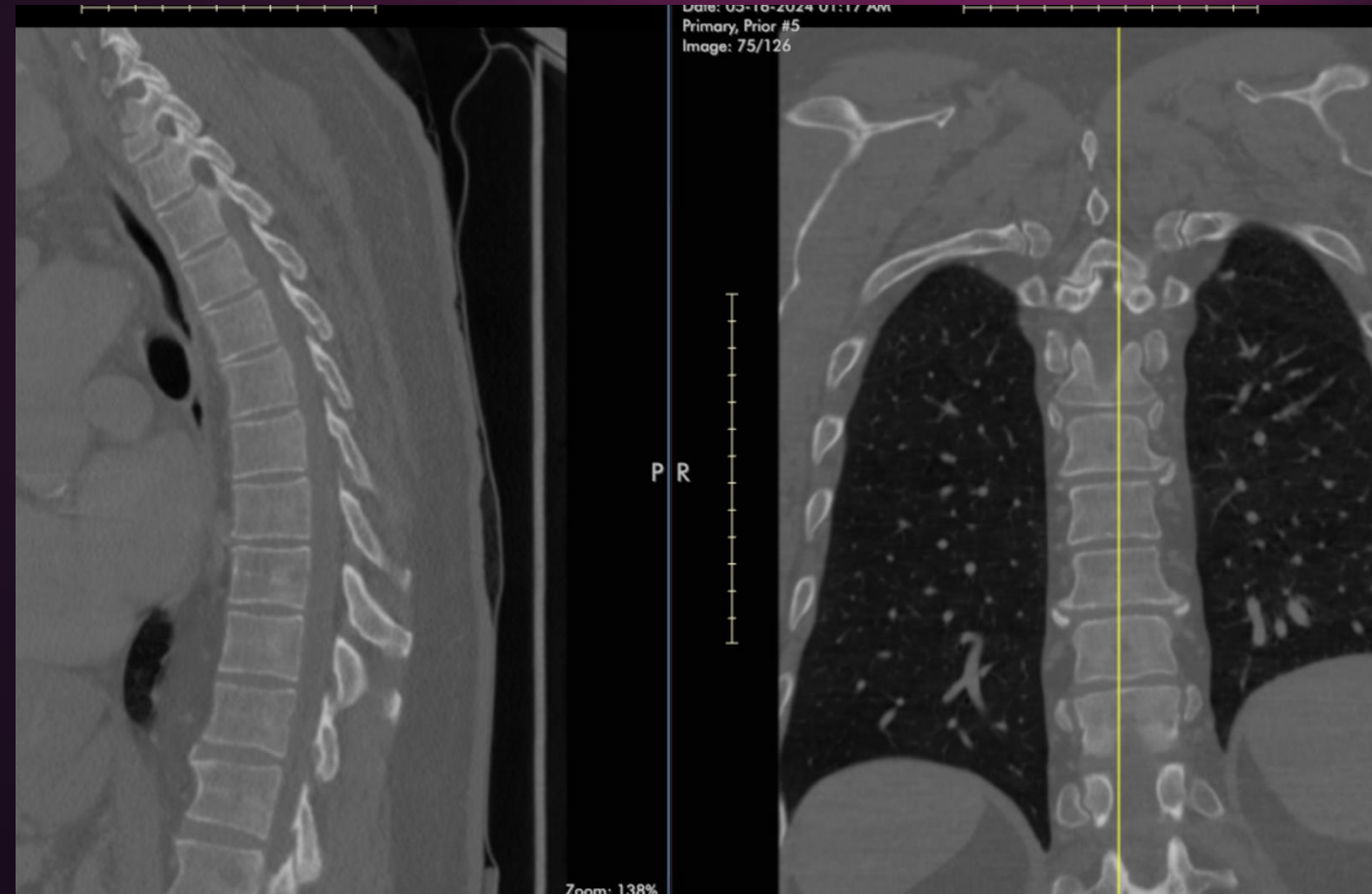
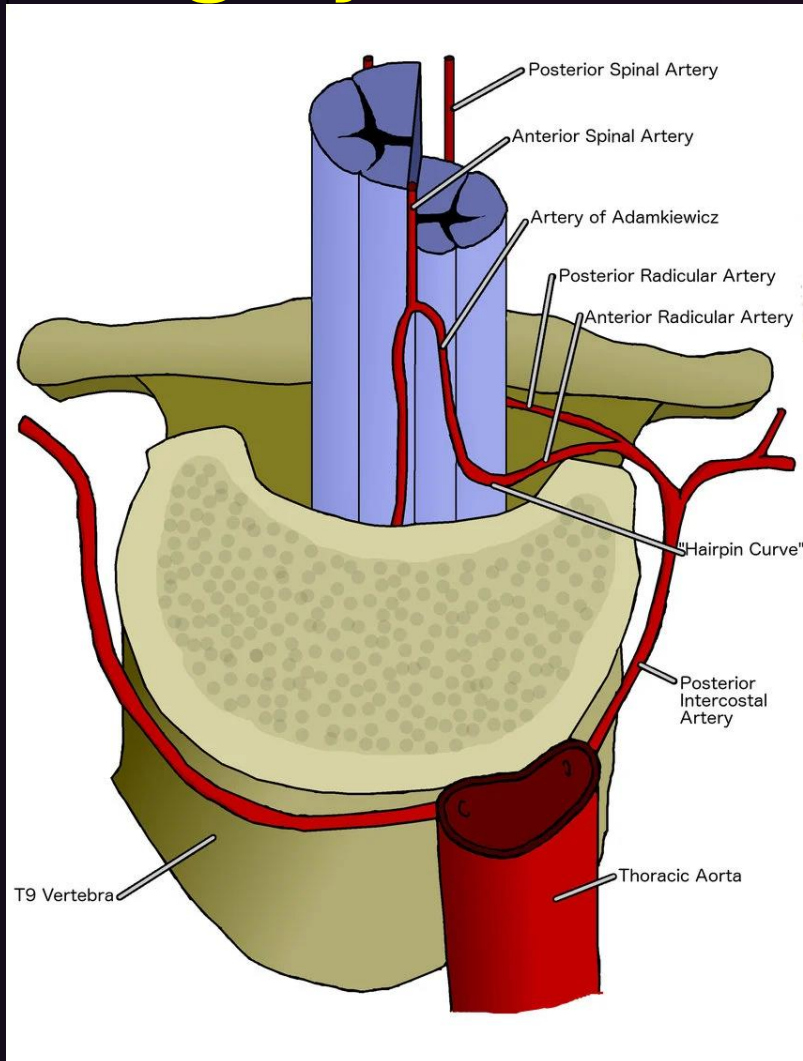
Clinical diagnostic limitations in Orthopaedic Surgery: Cervical Foraminal Stenosis



Pelvis: Interpolated data creates holes in images



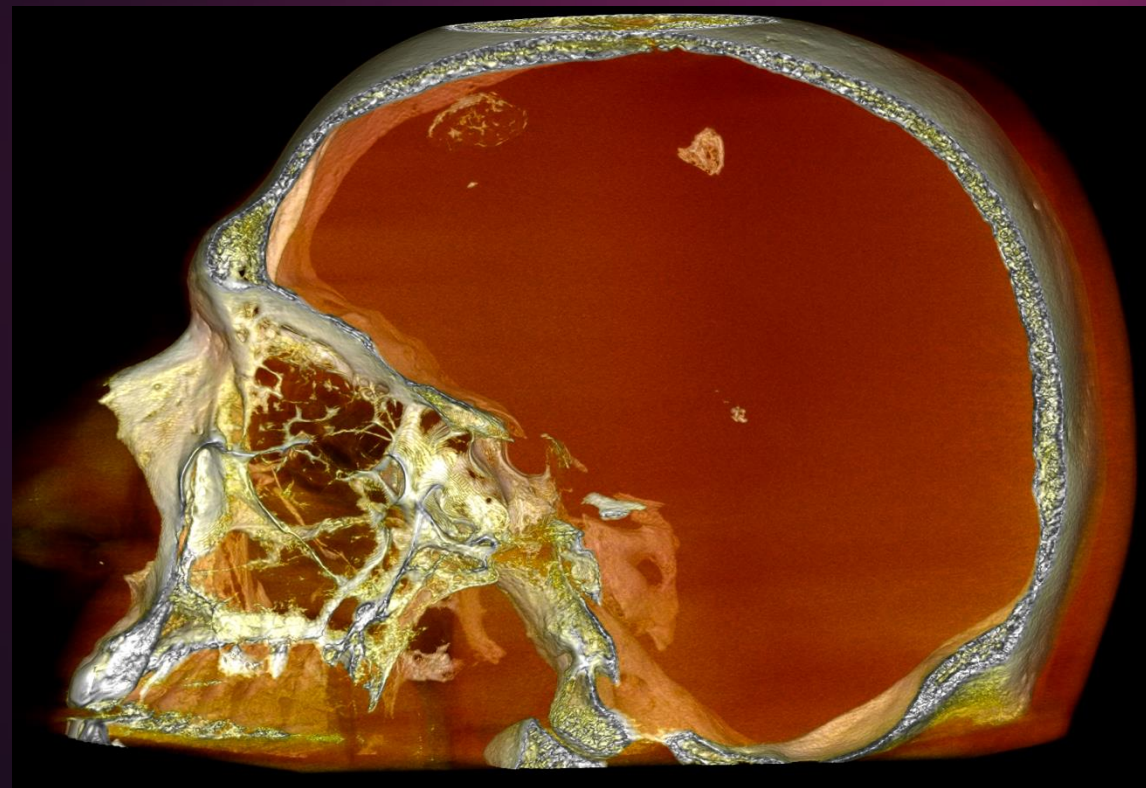
Clinical diagnostic limitations in Orthopaedic Surgery: Thoracic Artery of Adamkiewicz



Envigor8



SEE FACTOR CT3





High-Definition Volumetric Imaging – CT (HDVI)
Fluoroscopy & Digital Radiography

SEE FACTOR CT₃

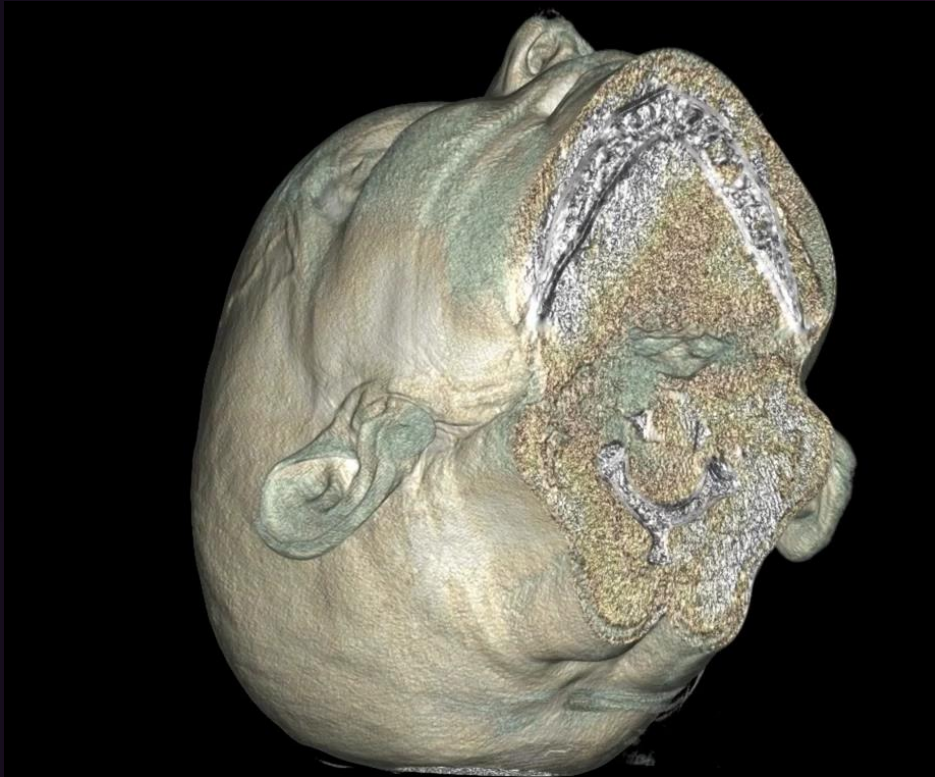
- World's highest resolution medical imaging
- Diagnostic, Interventional, Intraoperative
- Mobile (fits through a 36" door)
- 220V, 30amp single phase power
- Always 3D volumetric data
- No Interpolation
- Study complete with output images in 1 minute

There is literally no competition



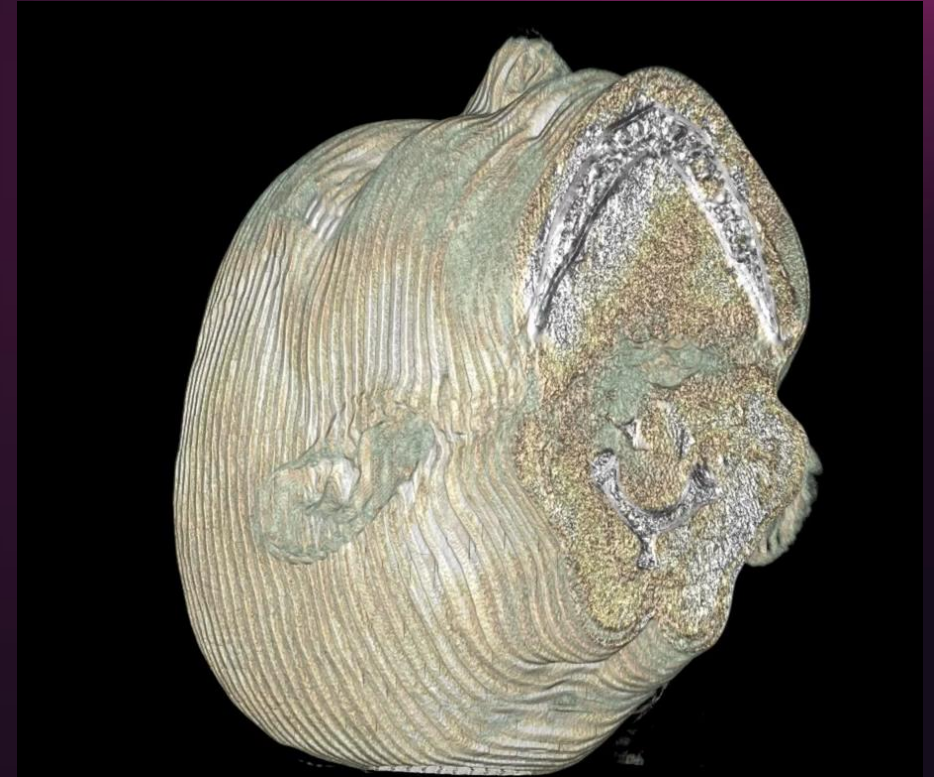
The Principal Difference is in the Collected Data

Epica's HDVI (SeeFactor CT3)



- *Gapless, Volumetric Data with No Interpolation*
- *One isotropic dataset at the highest resolution*
- *Primary imaging utility*

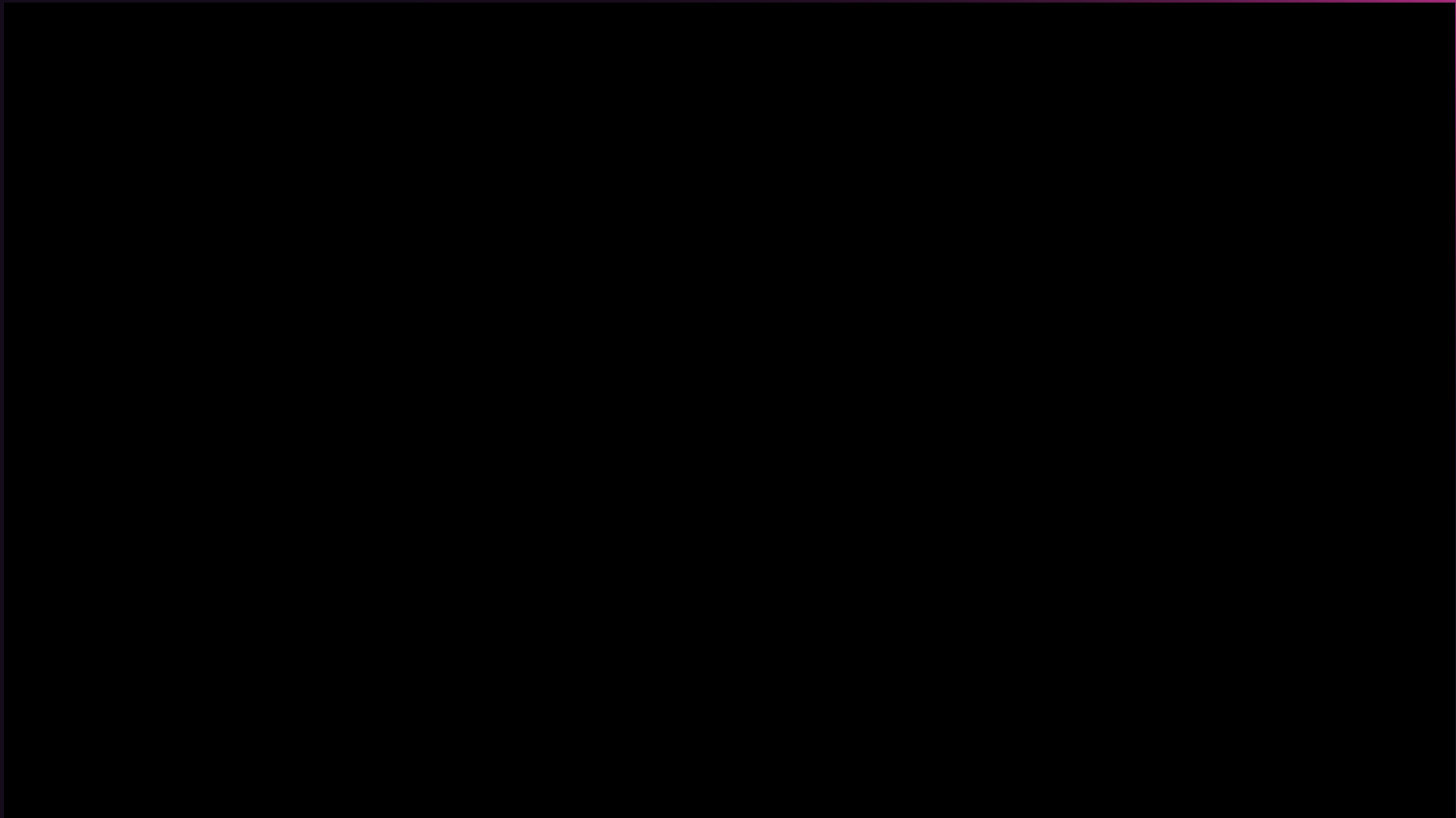
Conventional CT Systems



- *Data Gaps require Interpolation*
- *Multiple datasets- limited resolution*
- *Limited imaging utility*

SEE FACTOR CT_3





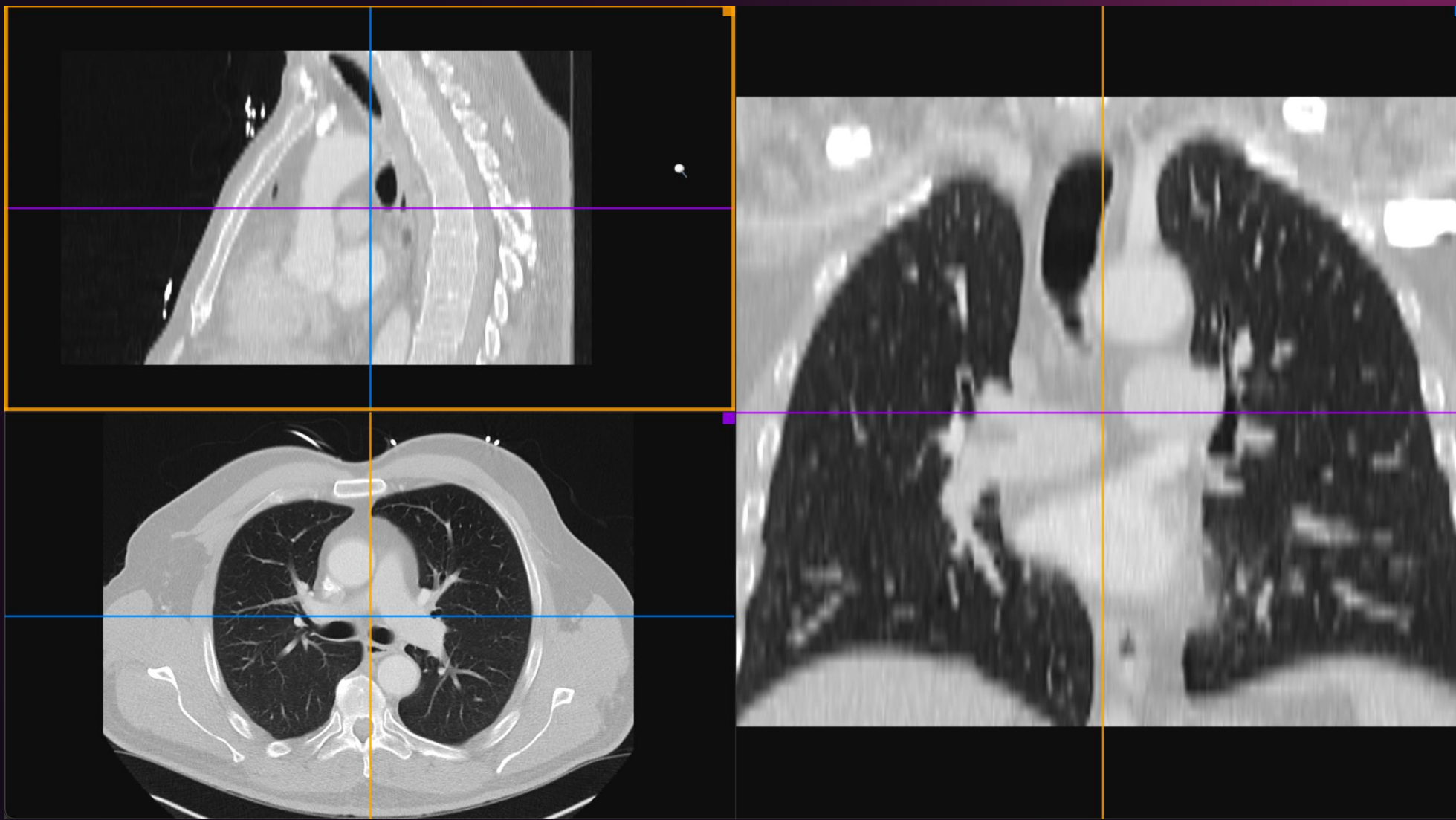
Somatom Definition AS, 128 Slice CT

Thorax study with CTA (Contrast) 5 mm slices. Viewed from Axial out put in MPR uninterpolated.

kV 120, mA 80, Time 500. 25cm scan

CTDIvol (mGy): 23;

DLP (mGy-cm): 1498

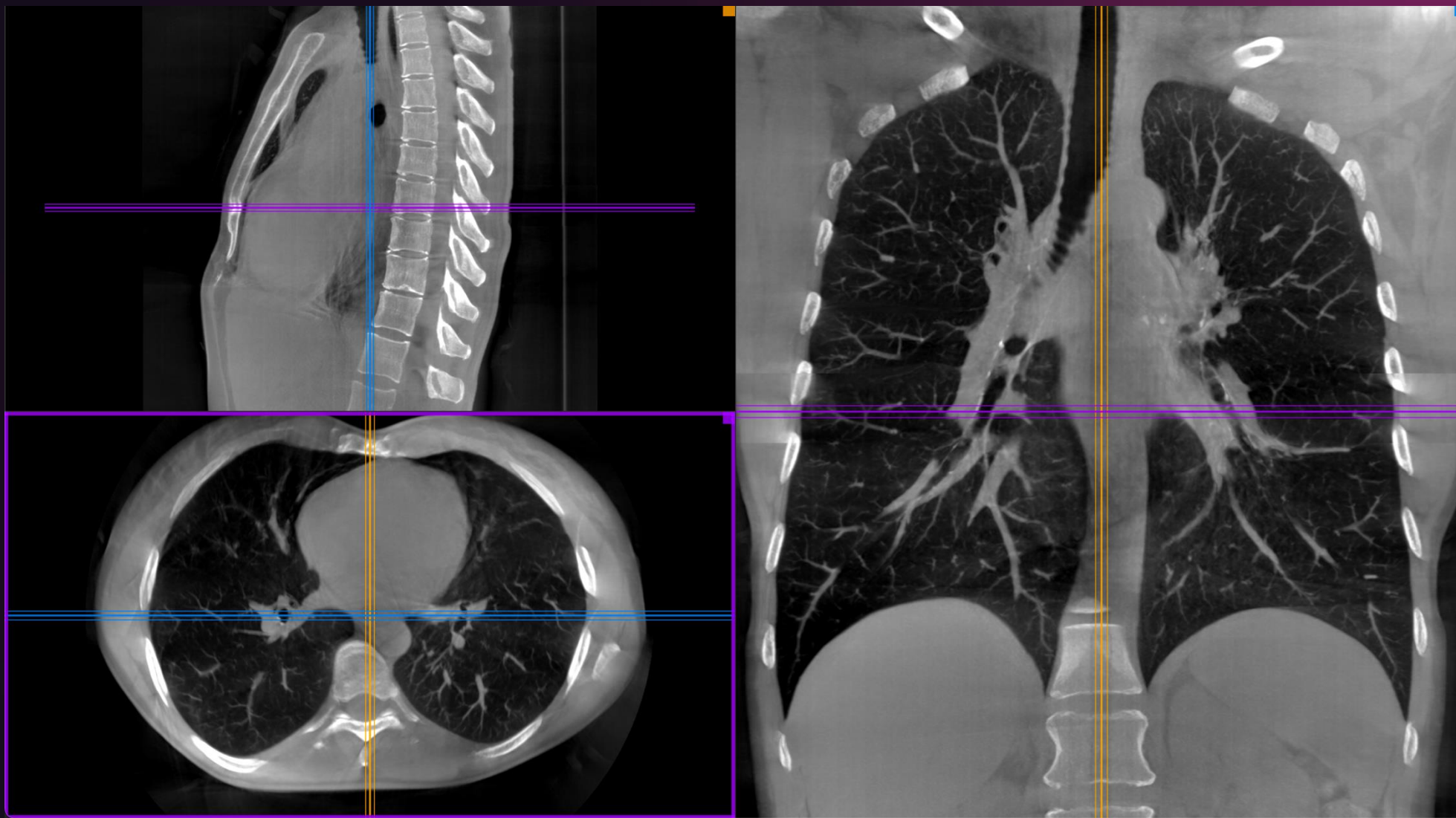




SeeFactor CT3, High-Definition Volumetric Imaging CT (HDVI-CT)

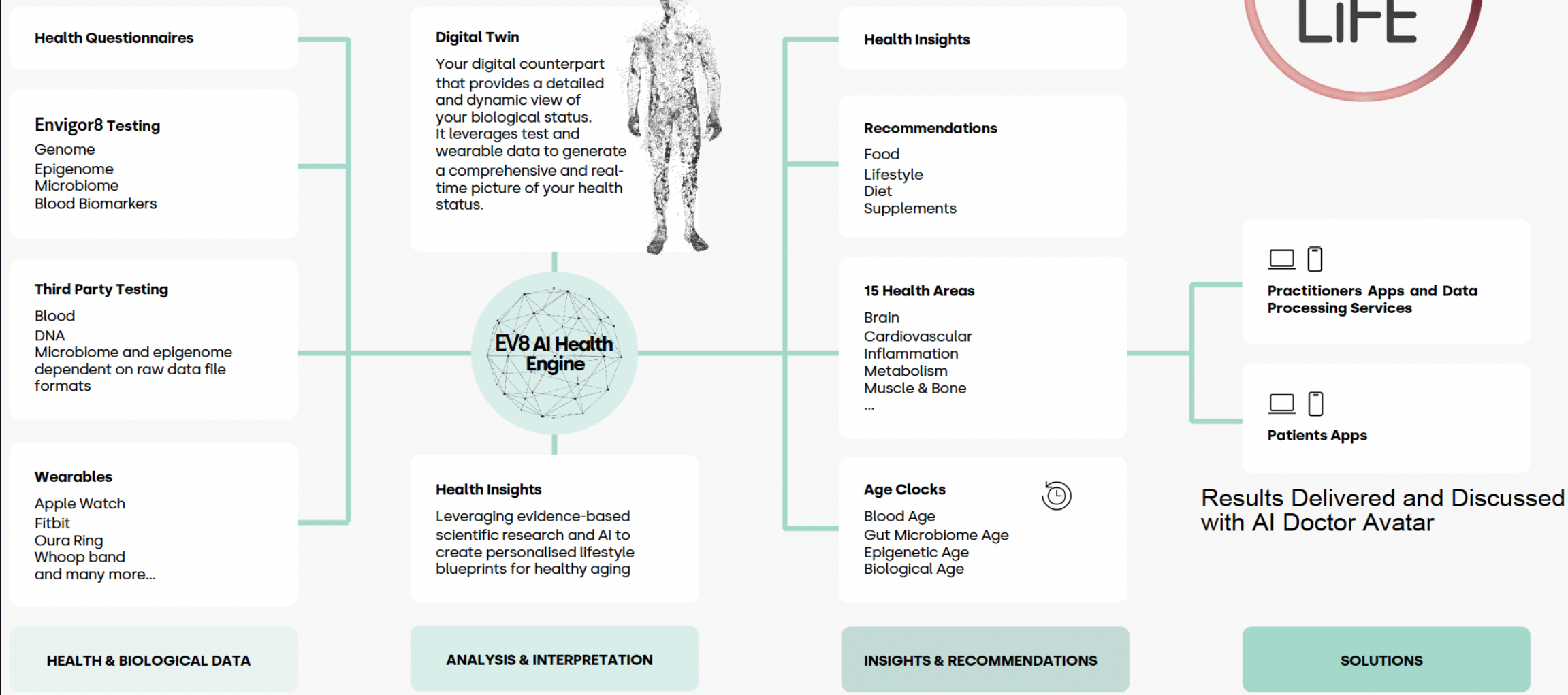
Thorax Study with no contrast given. Output resolution 0.3mm isotropic with no interpolation.

kV 90, mA 70, Time 504 ; 32cm scan; CTDI 21mGy DLP 383 mGy.cm (1200xhigher res data)

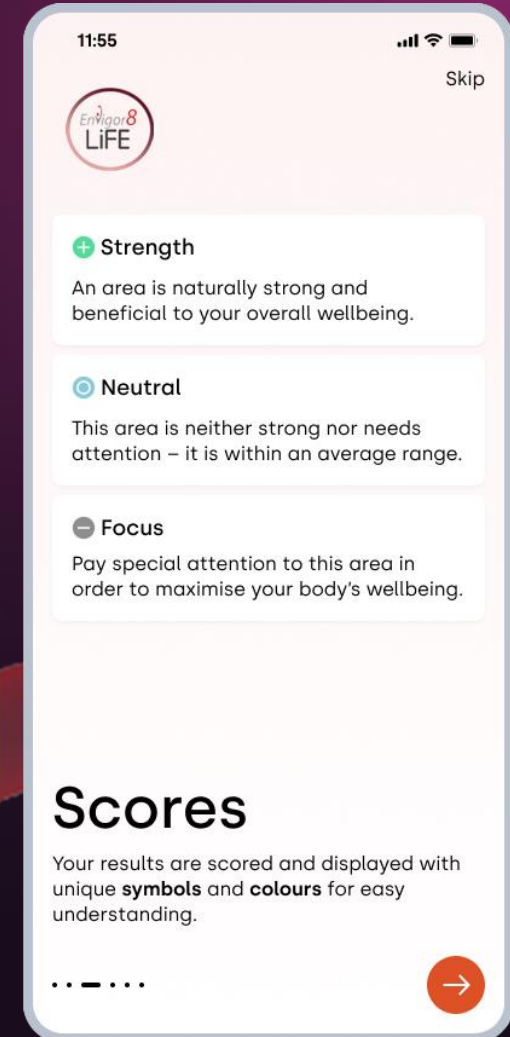
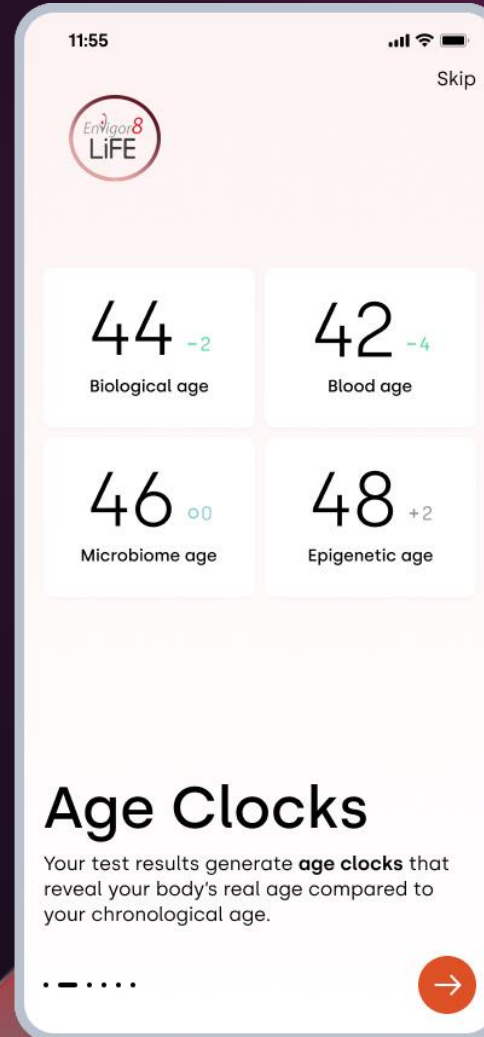
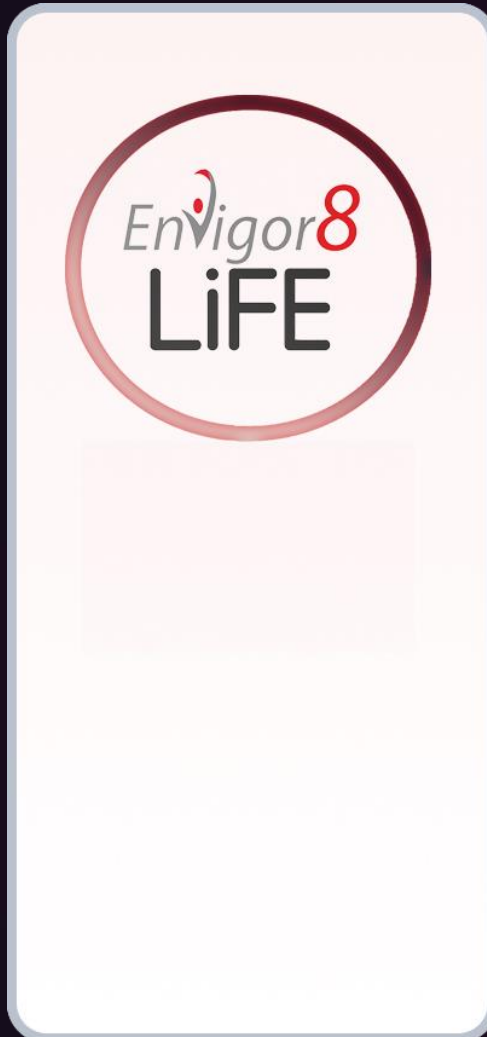




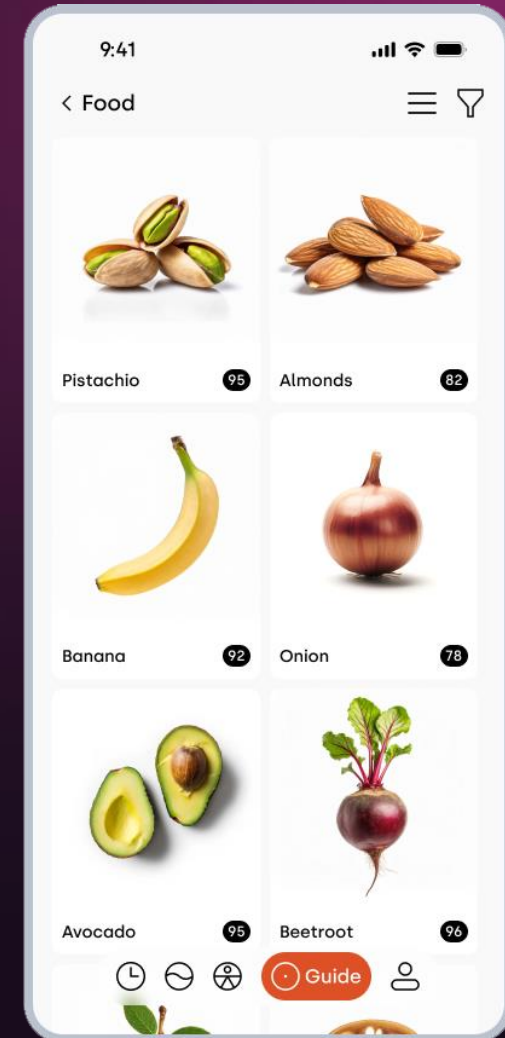
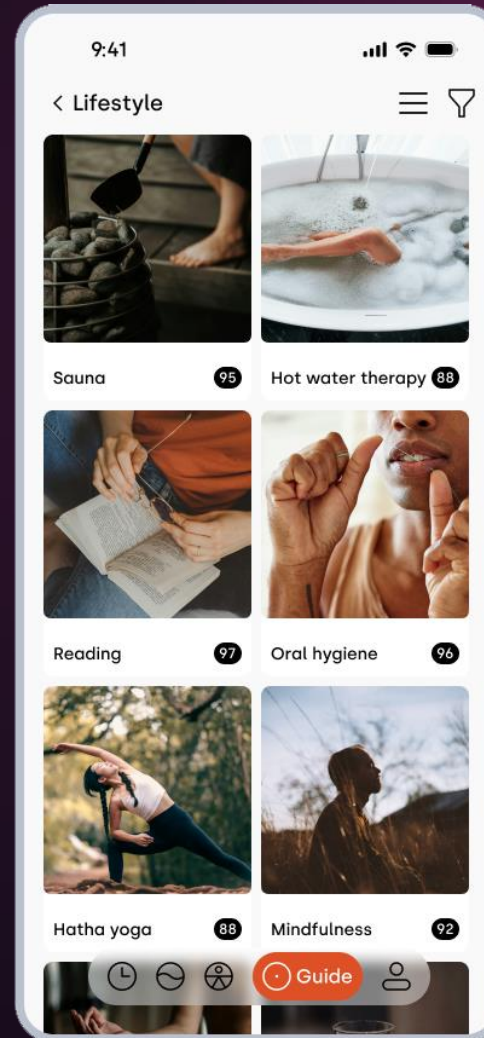
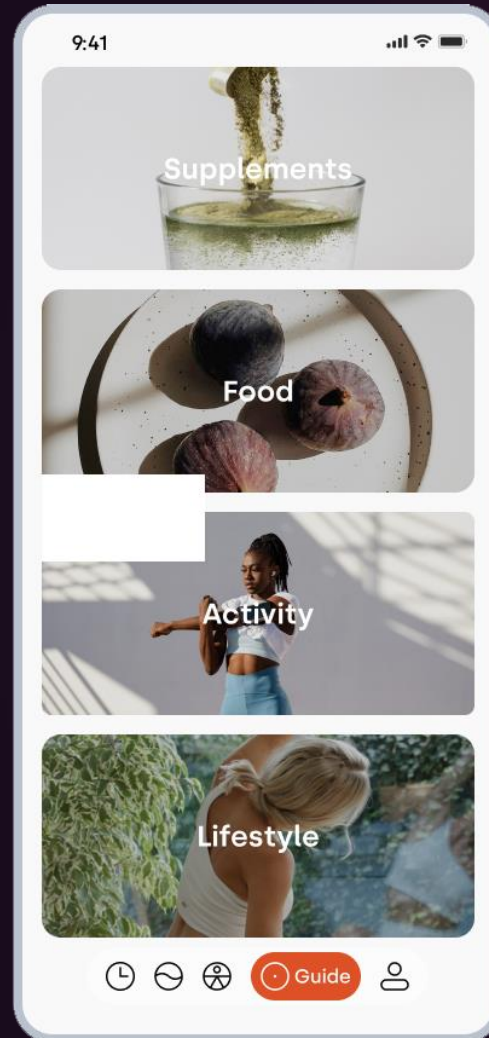
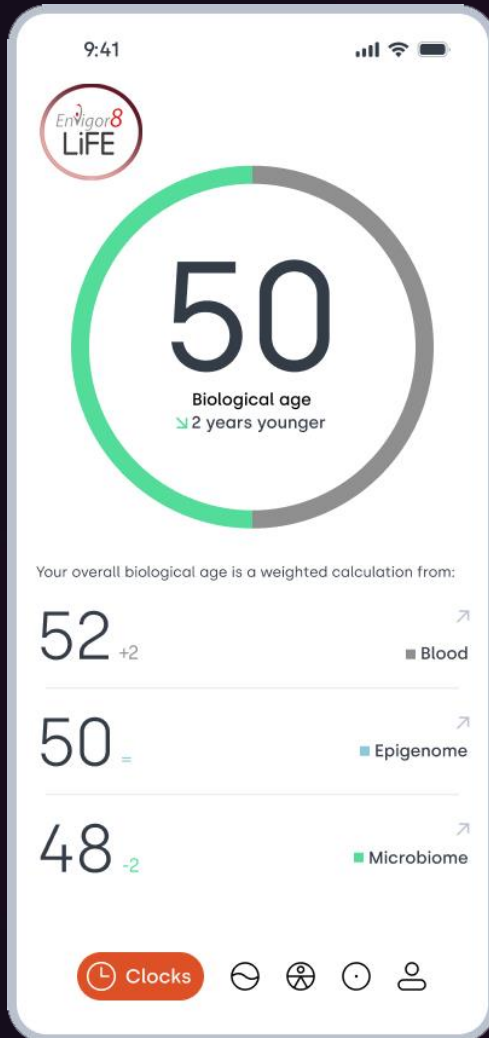
AI Powered, Envigor8 Digital Twin for Longevity and Wellness



App Onboarding



App Results Pages



Console



Overview

Actions 3

Clients

Inventory

Settings

Support

Shop

Overview

Actions

Clients

Inventory

Top Products

Report requests

You have 2

Resolve

3/25

Active

3

Completed tests

2

Testing in progress

20/25

Available

5

Activated

Order more

#

Name

Popularity

%

01

Genome

42%

02

Blood

30%

03

Microbiome

16%

04

Epigenome

12%

#

Name

Popularity

%

01

Summary

42%

02

Blood

30%

03

Insights

16%

04

Age clocks

12%

«

Joan Smith

Some Role

Powered by NU

Sample Report





JAMES SMITH
June 19, 2024

Summary report

www.envigor8.com

Contents

03	How to read this report
04	Age Clocks summary
05	Health insights summary
06	Test Results summary

Hello James,
here are a few
quick tips on how
to read this report.

MJ Pro Helix Center

Age Clock

Biological age is a measure of how well processes in your body are working. A biological age that is lower than your chronological age means that you are aging more slowly than average. A biological age that is higher means you seem to be aging more quickly. The microbiome and blood ages are broken down into individual contributing factors that you can target to address your rate of aging.

Focus, Neutral, and Strength labels

We use the Focus, Neutral, and Strength labels throughout our reports.

- Focus** This is an area of your biology that you should pay special attention to in order to optimise your wellbeing. The 'Focus' label may indicate this factor is more common in people who are not in optimal health or is linked to a slightly higher risk to your long term health. Some 'Focus' areas are expected as everyone has different natural strong points.
- Neutral** This is an area of your biology that is neither strong nor needs attention - it is within the range we expect for people similar to you. 'Neutral' means that this area aligns with the average in the population or has not been linked to any effects on your long term health. Obviously if you wish, these areas can be improved, but we recommend you pay the most attention to the 'Focus' points.
- Strength** This is an area of your biology which is naturally strong and beneficial to your health and longevity. Strength can mean this factor is more common in people in very good health or has been linked to a lower risk for developing age-related disease. It's good to know when your body is excelling, and these are not areas that need attention - if anything, just keep doing what you're doing.

Blood

We compare your blood results to the expected results for similar individuals. Your results will fall into the following categories: Optimal range (values linked to long-term peak performance), Reference range (in line with generally healthy people in your population), and Out of range (outside what we expect for healthy people in your population).

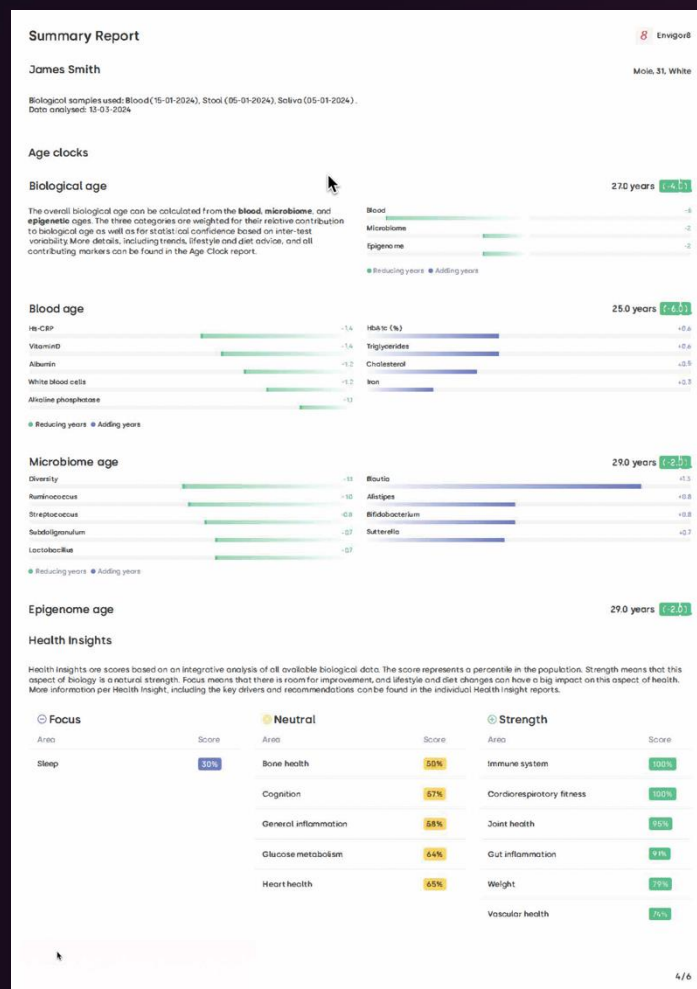
Genome

Genetic variants that have been linked to effects on your biology are divided into 'Focus', 'Neutral' and 'Strength'. Most people have many of each of these three categories. Each individual genetic variant usually has only a small effect on your health and wellbeing.

Microbiome diversity

A diverse gut microbiome is more resilient to disturbances, and beneficial for general health and wellbeing. The percentile measures how your microbiome diversity compares to that of the rest of the population. A score of 65% means that 65% of people have fewer species and 40% of the population has more species in their microbiome.

Sample Report



The logo is centered within a circular frame that has a white-to-red gradient. The text 'EnVigor8' is written in a stylized font, with 'EnVigor' in white and '8' in red. A red dot is positioned above the 'V', and a red swoosh extends from the top of the 'V' towards the '8'.

EnVigor8

**AI Powered
PACS/RIS**

AI Powered PACS/RIS



Picture Archiving Communication System (PACS)

- Provide a secure, cloud-based system to **store, access, and share medical images (DICOM)** easily and safely across medical facilities.
- Enable diagnostic workflows by integrating imaging data with **AI analysis, reporting, and patient records**.
- Ensure secure **storage** and **transmission** of medical images.
- Integrate with **RIS** and **HIS** for smooth workflow and reporting.
- Enable **remote access** for radiologists and doctors.
- Protect patient information with **encryption, anonymization, and role-based access**.

Radiology Information System (RIS)

- A software system to **manage patient records** and **medical images**.
- The system supports **HL7 communication** for seamless data exchange.
- Centralize patient information and Imaging Center data.
- Speed up diagnosis , image processes and reporting.
- Seamlessly integrate with **PACS** for image storage and access.

The logo features the word "EnVigor8" in a stylized font. The "En" and "Vigor" are in white, while the "8" is in red. A red dot is positioned above the "V".

EnVigor8

**Medical Imaging
AI Suite**

Medical Imaging AI Suite

Imaging Workflow

Connect with RIS and PACS for smooth clinical workflows.

Scaida

DetectCT

Abnormality Detection: Identify abnormalities with high accuracy (≤ 3 min/scan).

BrainCT-ICH

ICH Detection: Detect intracranial haemorrhages quickly (≤ 2 min/scan).



Cloud
Agnostic



Process

- **Data Collection:** Curate high-quality CT datasets
- **Model Development:** Train models for detection of abnormalities
- **Performance Evaluation:** Ensure models meet accuracy and speed benchmarks
- **Regulatory Readiness:** Complete FDA documentation, including model reports, risk assessments, and cybersecurity analysis

ScaidaCT AI Suite

Accurate detection and segmentation of diseases for different body parts

BrainCT

Detects brain bleeds, strokes, edema, and other critical findings

ChestCT

Helps detect lung diseases or infections, on chest scans

FracturesCT

Identifies fractures and bone injuries to support faster treatment

AbdomenCT

Supports diagnosis of liver, kidney, and digestive system conditions.

ShoulderCT

Identifies joint injuries, bone fractures, and degenerative changes.

PelvisCT

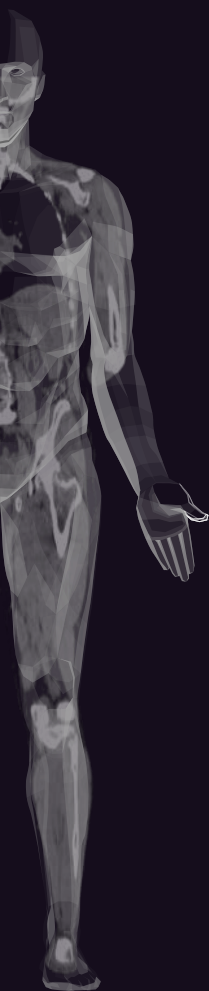
Assists in spotting fractures, bone health issues, and soft tissue changes

NeckCT

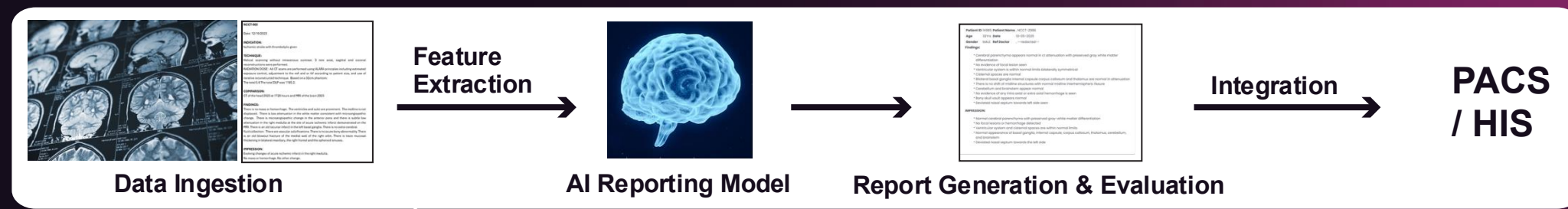
Analyzes scans for vascular issues, tumors, and structural abnormalities

LSpineCT

Detects spinal degeneration, disc herniation, and trauma-related changes.



AI Radiology Reports



AI-Powered Diagnostic Report Automation

- Ingests and learns from real-world brain CT images and expert-authored reports.
- Extracts clinical insights using a vision-language transformer model.
- Generates structured, high-quality reports that align with radiologist expectations.
- Integrates seamlessly with PACS and HIS for smooth clinical workflow.
- **CTReport**: Generates CT reports in **under 10 minutes**.
- **XReport**: Generates X-ray reports in **under 3 minutes**.

Patient ID 14985 Patient Name , NCCT-2986

Age 32Yrs Date 13-05-2025

Gender MALE Ref Doctor , --redacted--

Findings:

- Cerebral parenchyma appears normal in ct attenuation with preserved gray white matter differentiation
- No evidence of focal lesion seen
- Ventricular system is within normal limits bilaterally symmetrical
- Cisternal spaces are normal
- Bilateral basal ganglia internal capsule corpus callosum and thalamus are normal in attenuation
- There is no shift of midline structures with normal midline interhemispheric fissure
- Cerebellum and brainstem appear normal
- No evidence of any intra axial or extra axial hemorrhage is seen
- Bony skull vault appears normal
- Deviated nasal septum towards left side seen

IMPRESSION:

- Normal cerebral parenchyma with preserved gray-white matter differentiation
- No focal lesions or hemorrhage detected
- Ventricular system and cisternal spaces are within normal limits
- Normal appearance of basal ganglia, internal capsule, corpus callosum, thalamus, cerebellum, and brainstem
- Deviated nasal septum towards the left side