Lunar iDXA™
from GE Healthcare
Exceptional Precision and Accuracy

gehealthcare.com/bmh
Advanced DXA technology for bone and metabolic health assessment

Lunar iDXA offers research-grade image resolution and clarity with exacting precision, designed to provide you a high degree of clinical confidence across all body types for bone health and body composition.


Research-grade analysis helps you manage patients with confidence.

In your search for answers to a patient’s health concerns, information is everything. And with Lunar iDXA, GE Healthcare offers our most advanced system to provide the data and images you need. Whether you’re assessing bone density, fracture risk, metabolic health, pediatric development or sarcopenia Lunar iDXA gives you a clear view inside the body.
Lunar iDXA for Bone Health

Exceptional clarity.
One in four women over the age of 50 will suffer a vertebral fracture in her remaining lifetime, with severe impact on quality of life. It’s vertebral assessment is comparable to radiographs in identifying and classifying deformities concerning etiology, grade, and shape, while using a lower dose of radiation.

High-resolution images bring anatomy into focus.
Lunar iDXA delivers crisp, high resolution images that clearly render the end plates on spine images and identify intervertebral spaces. See proximal femur details, visualize cortical thickness, and view high quality total body images.

Performance comparison of DXA beam types

<table>
<thead>
<tr>
<th></th>
<th>Pencil Beam</th>
<th>Narrow Fan Beam</th>
<th>Wide Fan Beam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan time</td>
<td>Long</td>
<td>Short</td>
<td>Short</td>
</tr>
<tr>
<td>Bone height measured</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Magnification effects</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Off-center distortions</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Scattered radiation</td>
<td>Lowest</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

Detect small changes nearly twice as fast.
Osteoporosis treatment and other clinical interventions require time to monitor. Lunar iDXA helps with exceptional precision, due to its direct-to-digital detector plus staggered array and narrow-angle fan beam technology with Multi-View Image Reconstruction (MVIR). This prevents magnification error that is present in competitive wide-angle fan beam systems.

What’s all this precision worth to you? It enables you to detect small and significant changes sooner, which can help motivate patient compliance, guide treatment decisions and reduce sample size required for clinical trials.

Performance comparison of DXA beam types

In this example, analysis shows that precision with Lunar iDXA allows clinicians to detect true metabolic change as early as 5.8 months, compared with 10.8 months for competitive equipment (95% confidence).

Direct-to-digital detector plus staggered array enhance precision and create high-resolution images.
Lunar iDXA for Metabolic Health

Visualization Tools

Advanced visualization tools help patients understand impact of diet, lifestyle and exercise on their health and athletic performance. Utilize color coding for an effective visualization of lean, fat and bone distribution from a total body scan. Our color mapping tool enables you to set custom thresholds for viewing fat and lean mass.

Advanced Metabolic Insights

- Total Body Composition
- RMR, RSMI, BMC, fat and lean trending
- Sarcopenia\(^5\)
- Custom Reference Population
- Option to Integrate Hydration Levels from BIA/BIS (TBW, ECW, ICW) to have 5 compartment models (LM, FM, BMC, ECW, ICW) and more

Higher precision enables best estimate of Appendicular Lean Mass (ALM) for effective assessment of sarcopenia.

Lunar iDXA:
Exceptional Precision and Accuracy

Fully Customizable Reports

Fully customizable reports can be made as concise or as detailed as needed.

OneScan performs spine and dual femur BMD measurements in a single acquisition without repositioning! Results print in a one-page report.
A Few of our Newest Applications

A wide breath of applications and features

- **Trabecular Bone Score – Integrated TBS**
  Provides TBS score based on assessment of trabecular region of bone, including FRAX-adjusted TBS. Includes TBS license. Complimentary 60-day TBS software trial program available for new TBS customers.

- **DXAVision**
  Provides one unified workflow and comprehensive reporting for BMD, AFF, VAT and SAT. Designed to improve operator efficiency with a scan time up to 40% faster. Includes Total Body and Smaller Body (ROI) Composition, Total Body Less Head (TBLH) and Neck-to-Knee for Adults.

- **Neck-to-Knee for Adults**
  Performs a faster scan by omitting head and lower legs, providing an estimate of total body composition.

- **Total Body Less Head (TBLH) for Adults**
  Including the skull can mask changes occurring in other areas of the skeleton; this tool automatically performs a scan from the neck down. Can also get TBLH results for scans with the head included.

- **CoreScan with VAT and SAT Results**
  CoreScan estimates Visceral and Subcutaneous Adipose Tissue (VAT and SAT) mass, volume and area within the android region. Values can be displayed in user-defined statistical formats and trends.

- **Sports Athletics Package**
  Includes TBLH (Total Body Less Head) for Adults and Smaller Body Comp – ROI to easily scan and report on specific Regions of Interest. Facilitates study of localized changes in body composition.

- **Smaller Body Composition (Regions of Interest)**
  Monitor and report on Regions of Interest (ROI) including upper arm, lower arm, upper leg and lower leg, to study changes in body composition in these regions.

- **Advanced Analytics**
  Provides deep BMD and Body Composition insights with custom equations, metrics and ratios based on 200+ DXA bone and body composition parameters. User-defined classification thresholds, trending and reporting.

- **Customizable Thresholds (AFF and VAT)**
  Enables setting of custom thresholds to search for correlations between "beaking" and the probability of AFF, and between VAT and the probability of metabolic disorders.

- **Composer Reporting**
  Provides default style sheets, which can be edited using an intuitive WYSIWYG interface to quickly produce customized reports and templates.

- **Advanced Security (DoD RMF)**
  Advanced cybersecurity features that meet U.S. Department of Defense Risk Management (DoD RMF) requirements.

Advanced Analytics Power Deeper Insights

Create your own custom equations and ratios

Analyze data within your DXA: create custom ratios, make predictions, and pin metrics pinned on the built-in dashboard to track changes over time.

**MORE THAN 200 BONE AND BODY COMPOSITION PARAMETERS FOR ANALYSIS.**

**Sample Metric** = VAT Mass / Total Fat Mass

**BODY COMPOSITION ANALYTICS**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>DXA</th>
<th>Regions</th>
<th>DXA</th>
<th>Parameters</th>
<th>DXA</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC</td>
<td>L1</td>
<td>Area</td>
<td>BMD</td>
<td>L1</td>
<td>BMD</td>
</tr>
<tr>
<td>Fat Free Mass</td>
<td>L2</td>
<td>Right Arm</td>
<td>BMD</td>
<td>L2</td>
<td>BMD</td>
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<tr>
<td>Fat Mass</td>
<td>L3</td>
<td>Android</td>
<td>BMD</td>
<td>L3</td>
<td>BMD</td>
</tr>
<tr>
<td>Lean Mass</td>
<td>L4</td>
<td>VAT</td>
<td>BMD</td>
<td>L4</td>
<td>BMD</td>
</tr>
<tr>
<td>Region %Fat</td>
<td>L1-L2</td>
<td>SAT</td>
<td>BMD</td>
<td>L1-L2</td>
<td>BMD</td>
</tr>
<tr>
<td>Tissue %Fat</td>
<td>L1-L4</td>
<td>Total Body</td>
<td>BMD</td>
<td>L1-L4</td>
<td>BMD</td>
</tr>
<tr>
<td>Tissue Mass</td>
<td>etc.</td>
<td>TBLH</td>
<td>BMD</td>
<td>etc.</td>
<td>BMD</td>
</tr>
<tr>
<td>Total Mass</td>
<td>etc.</td>
<td>much more</td>
<td>BMD</td>
<td>etc.</td>
<td>BMD</td>
</tr>
</tbody>
</table>

**BONE ANALYTICS – VARIOUS SKELETAL SITES**

<table>
<thead>
<tr>
<th>Regions</th>
<th>DXA Parameters</th>
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<th>DXA Parameters</th>
<th>DXA Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ap Spine</td>
<td>Area</td>
<td>Bone Density</td>
<td>Area</td>
<td></td>
</tr>
<tr>
<td>Femur</td>
<td>BMD</td>
<td>BMD</td>
<td>BMD</td>
<td></td>
</tr>
<tr>
<td>etc.</td>
<td>etc.</td>
<td>etc.</td>
<td>etc.</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Some parameters may require purchase of additional features.

Custom Regions of Interest (ROI) can also be used with Advanced Analytics feature. Metrics and trending can be retrospectively performed on past data as well.
Advanced Technology. Incredible Results.

Lunar iDXA uses innovative photon-counting detector technology that provides near-radiographic image quality. These detectors utilize solid-state Cadmium Telluride (CdTe) crystals to absorb the x-ray energy, which immediately release electrons from their atoms (i.e., direct conversion). An applied voltages pushes the electrons out of the CdTe crystal, effectively creating a current pulse with a magnitude proportional to the x-ray energy. The signal is boosted and finally identified as low or high energy.

Multi-User Database with a Secure Platform

Acquire and save images from multiple GE Healthcare densitometers to a common database.

Advanced security features protect your data.

<table>
<thead>
<tr>
<th>Security Feature</th>
<th>Provided Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPv6 for DICOM and HL7</td>
<td>Communication protocol integrating IPSec for better security during data exchange</td>
</tr>
<tr>
<td>FIPS 140-2 Encryption</td>
<td>Federally compliant encryption standard that protects patient exam files using 256-bit encryption</td>
</tr>
</tbody>
</table>
| Audit Trails       | Logs information related to:  
  • Software configuration and user access changes, destination IP addresses  
  • Database events including authentication, patient modification/deletion  
  • Events supported by the DICOM Audit Trail Profile |
| TLS for DICOM⁶      | Provides security at the transport layer of a DICOM transaction by using encryption and node authentication. TLS is an updated, more secure, version of the SSL protocol. |

Patented Narrow Fan Beam Scan
Combining the features of pencil beams and wide fan beams, Narrow Fan Beam technology offers a shorter scan time with reduced magnification error (inherent to wide-angle fan beam scans).

Low-Dose Photon Counting Technology
Dose-efficient photon counting detector technology more efficiently counts X-ray photons, lowering dosage to the patient.

Innovative SmartScan™
Our SmartScan technology reduces scan time and X-ray dosage by identifying bone regions after each transverse sweep and estimating where to begin scanning on the subsequent sweep.

K-edge Filter
An exceptional "K-edge filter" that creates a dual energy beam and absorbs the X-rays in the middle energy range and protects the patient against unnecessary exposure.

Multi-View Image Reconstruction (MVIR)
By performing multiple transverse sweeps across the site of interest, MVIR accurately determines bone-height above the tabletop, minimizes magnification errors and provides excellent precision and accuracy.

Low Scattered Radiation
Narrow-fan beam technology results in low scatter radiation in comparison to wide-angle fan beam systems.¹⁶
Specifications

Scanner dimensions:

The Lunar iDXA is designed to have minimal impact on your practice in both the installation requirements and required operating space. The Lunar iDXA is shown in a 3.35 m x 3.2 m exam room with the included workstation. No operator shielding or special site preparation beyond a dedicated 100-127/200-240 VAC duplex outlet is usually required. The outlet should be placed near the desired location of the operator’s console.

Minimum room dimensions21:

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Scanner table specifications:

Scanner size 2.87 m x 1.31 m x 1.25 m (113” x 52” x 49”)
Scanner weight 353 kg (778 lbs)
Patient table top height 64 cm (25”)
Active scan area 198 cm x 66 cm
Start position indicator cross laser light (Class II, <1 mW power)
Communication cable Ethernet
Scanner leakage current meets IEC 60601-1 safety standard

Environmental specifications:

Power 100-127 VAC 50/60Hz 20A dedicated circuit
Distortion sinusoidal waveform, less than 5% THD
Humidity 20%-80% non-condensing
Room temperature 18°C-27°C (65°F-81°F)
Scanner heat output idling 150 BTU/hr, scanning 1800 BTU/hr
Console heat output approx. 200 BTU/hr with 24” monitor
Ventilation all cooling vents must remain unblocked
Dust, fumes, debris install system in clean, ventilated area

Detector specifications:

Detector high-definition, direct-digital detector

Computer specifications:

• Intel® Core™ i3 Processor
• Windows® 10 IoT Enterprise 64-bit
• RAM 8 GB
• Hard drive 1 TB
• Optical drive DVD-RW
• Monitor 24” SVGA (minimum resolution 1920 x 1080 32-bit color)
• Archive 500 GB USB hard drive
• Adobe® Reader® DC
• Internet Explorer® 11
• Two 10/100 Mbit Ethernet ports
• Windows®-compatible printer

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HEALTHY BONES. HEALTHY BODY.
References:

1. Armbr echt G, Felsenberg D. Diagnostic of vertebral deformities: Comparison of VFA (GE iDXA) to conventional radiographs. ASBMR 2009.
5. Not available in Japan.
7. Consult for market availability.
8. Requires purchase of AFF application and Corescan (for VAT and SAT) application.
10. Requires DXAVision.
11. Requires DXAVision or Sports Athletics Package.
12. Not available in Japan.
13. Requires Advance Analytics.
15. Customizable Threshold for VAT requires CoreScan application.
17. German speaking countries only.
19. Consult for market availability.
20. Available only in the United States.
21. A small room kit with isolation transformer may be required. Please refer to local regulations.
22. Consult and follow local X-ray regulations.

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