

GE Medical Systems

# Lunar Prodigy Bone Densitometer

Direct Digital Fan Beam



imagination at work



# Prodigy. A breakthrough in fracture risk assessment.

You are always looking for more effective ways to diagnose osteoporosis and assess your patients' fracture risk. That's why GE Lunar developed the Prodigy – the most complete bone assessment tool ever devised.

Prodigy's improved technology and precision detects bone changes in a variety of clinical conditions. Using direct-digital detector technology, it delivers rapid scans, near-radiographic imaging, and dose efficiency three to five times better than traditional fan beam systems. Its comprehensive capabilities include Advanced Hip Assessment and Dual-Energy Vertebral Assessment – powerful new tools for fracture risk assessment.

Prodigy's enCORE™ software, based on the Windows® platform, optimizes productivity with automation breakthroughs that save time and ensure consistent results. And paperless digital reporting makes densitometry results available quickly and easily.

Prodigy also gives you extensive options for integrating bone assessment with local facility networks and the Internet – so you can share information across your entire healthcare system.





# Complete accuracy from any angle.

Prodigy's narrow-angle fan beam technology determines bone mineral density, which is dependent on accurate measurements of bone mineral content and area.

The depth and location of bone can vary significantly with the patient's size, and shape. Results from competitive wide-angle fan beam systems are subject to distortion caused by magnification. Therefore, these systems can only estimate the bone mineral content, size and geometry based on an approximation of the bones.

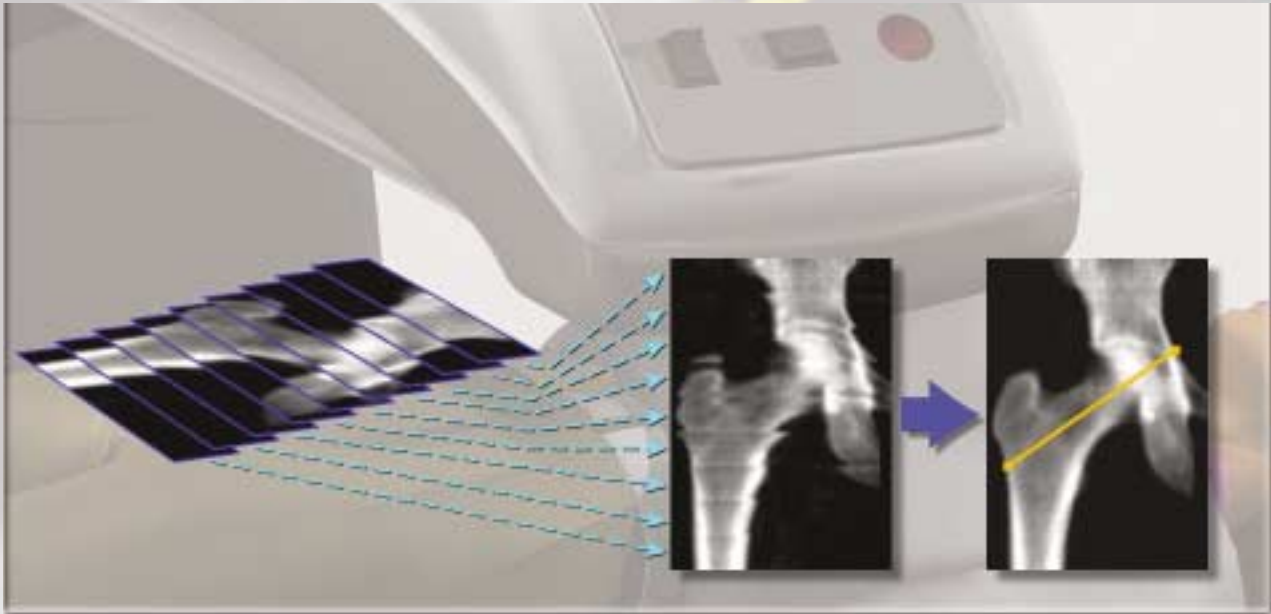
Prodigy eliminates this guesswork. The narrow-angle fan beam makes multiple passes across the patient, acquiring multiple, overlapping images. Then, TruView Image Reconstruction slides the images together for a perfect match.

The result: Prodigy determines the depth of the bone accurately in every patient, ensuring precise, reliable, consistent measurements of bone area and mineral content – plus key geometric measures like hip axis length (HAL).

*"Hip Axis Length (HAL) has been demonstrated in several prospective studies to predict fractures. Each 10 mm increase in HAL increases hip fracture risk 2-fold. Precision error of HAL on the Prodigy Vision, determined from 43 subjects scanned multiple times, was 0.7%. While HAL cannot be viewed as a stand-alone clinical predictor, it can potentially provide utility in conjunction with BMD to identify high-risk patients."*

Kenneth G. Faulkner, Ph.D.  
Chief Scientist  
GE Medical Systems Lunar





*By reconstructing the image acquired by multiple passes of its narrow-angle fan beam, Prodigy determines the exact location, and the precise size and shape, of the spine and hip to accurately determine bone area, bone mineral content and bone geometry, such as hip axis length.*



# Expanded clinical utility. Right down to the bone.

Evidence continues to mount that there is additional clinical information to be derived from femoral bone density measurements – if the necessary analysis software were available.

Now, for the first time ever, the GE Lunar Prodigy delivers these remarkable analytical capabilities.

## Advanced Hip Assessment

The Prodigy provides the first major advances in femoral densitometry assessment since the introduction of DXA system software in 1987. These advances are included in the new Advanced Hip Assessment software, available on the Prodigy.

Advanced Hip Assessment includes all the standard femoral regions of interest that have been previously available, plus additional key measurements and assessments:

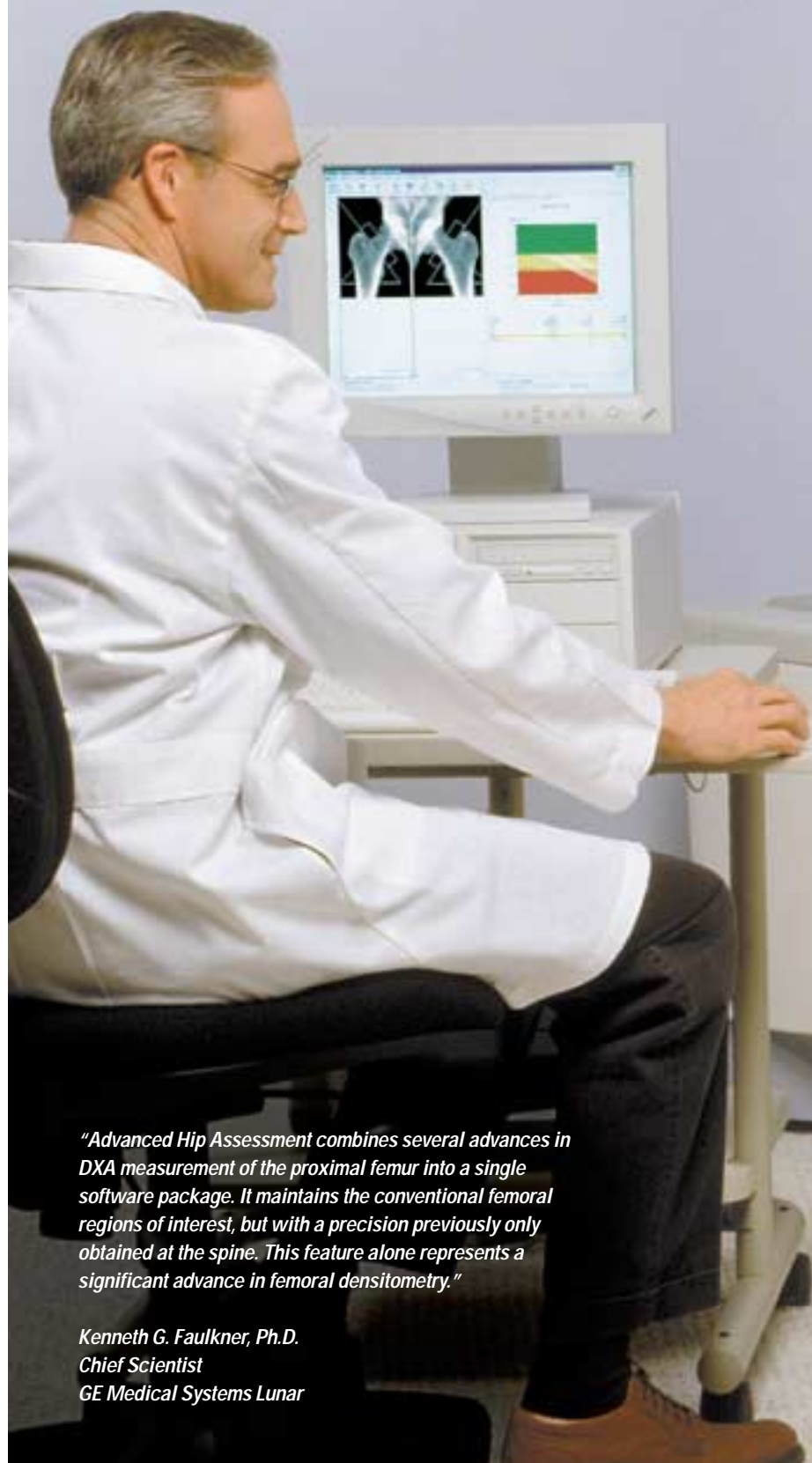
- **Hip Axis Length (HAL)** has been demonstrated in prospective studies as an effective adjunct to femur bone density in predicting fracture risk.
- **DualFemur™** identifies the weakest femur while improving precision over single-femur measurements.

### Dual femur assessment



	Single Femur Precision	Dual Femur Precision
Total Femur Region	0.7% CV	0.4% CV

Reference: SL Bonnick, LA Lewis. Texas Woman's University, Denton, TX, US

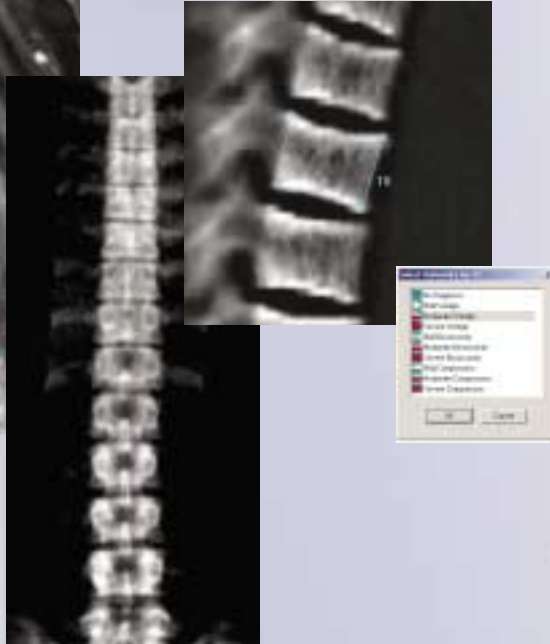


*"Advanced Hip Assessment combines several advances in DXA measurement of the proximal femur into a single software package. It maintains the conventional femoral regions of interest, but with a precision previously only obtained at the spine. This feature alone represents a significant advance in femoral densitometry."*

**Kenneth G. Faulkner, Ph.D.**  
Chief Scientist  
GE Medical Systems Lunar



*Dual-energy Vertebral Assessment*



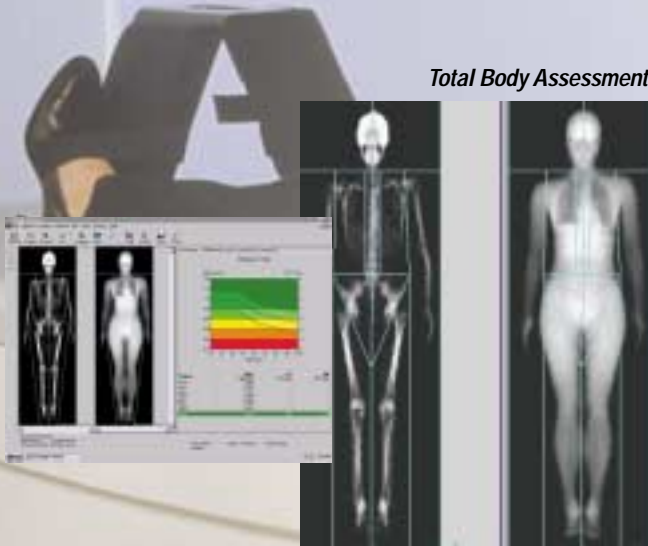
### **Dual-energy Vertebral Assessment (DVA)**

Prodigy's optional DVA improves fracture risk estimation by identifying existing vertebral fractures, which at least double future fracture risk<sup>1</sup> regardless of bone density. DVA subtracts soft-tissue artifacts for better bone images and the ClearView filter highlights vertebral endplates for improved visual assessment.

DVA provides AP and lateral dual- and single-energy images in one, fast acquisition. A 6-point, user-adjustable Wizard allows for easy, step-by-step quantification with reference data for vertebral heights and A/P ratios.

### **Total Body Assessment**

The ultimate in skeletal assessment, the Total Body exam provides both bone density and body composition (i.e., % fat) results. With an FDA-cleared, gender-matched database, total body results expand the utility beyond osteoporosis management where the combined results are used in a variety of secondary conditions, or when spine/hip measurements are compromised.



*Total Body Assessment*

### **Orthopedic Analysis**

The optional enCORE software platform facilitates accurate, customized analysis. It automatically excludes hip prostheses, metal fastenings and other artifacts from the analysis region for accurate bone density results. Gruen zone analysis is performed automatically, or you can quickly define customized regions of interest of any shape and size. Customized enCORE analysis ensures precise, reproducible results while expanding your clinical and research applications.

*Orthopedic Analysis*



<sup>1</sup> Ross PD, Davis JW, Epstein RS, Wasnich RD. Pre-existing fractures and bone mass predict vertebral fracture incidence in women. *Ann Intern Med.* 1991; 114(11):919-23.



# No speed limit.

Loaded with features for faster, easier and more convenient operation, the Prodigy will streamline performance and throughput in the busiest practices, clinics and departments.

## **Revolutionary enCORE software optimizes productivity.**

Based on Windows®, GE Lunar's unique enCORE software provides true Windows capabilities, including right-click menus, drag-and-drop editing and integration with other applications. Multiple scans can also be opened simultaneously. enCORE's intuitive graphical interface provides ease-of-use, fast throughput and automation that frees the operator for other tasks.

## **One-step AutoAnalysis delivers fast, precise, consistent results.**

Excellent precision, or reproducibility, is key to detecting small changes in bone density. enCORE's AutoAnalysis calculates results in just one keystroke, for fast, precise analysis. Only GE Lunar offers true one-button analysis, eliminating operator variability, subjective decisions and inconsistent analysis in over 90% of scans.

## **OneVision reporting saves time and costs.**

The Prodigy automatically combines scans of the spine and both hips into one comprehensive exam, acquired in one process and evaluated in one analysis. Rather than receiving multiple assessment reports, the referring physician receives a single, consolidated report that combines all risk assessment analyses for greater convenience and time savings.



Analyze



Measure







**OneScan for faster testing.**

OneScan simplifies BMD testing by acquiring Spine and DualFemur scans in one, automatic process from a single patient position. The process requires less operator training and patient positioning. Typical throughput savings are 10 to 15 percent.

**CAD – Computer Assisted Densitometry adds quality and diagnostic power.**

Optional Computer Assisted Densitometry (CAD) automatically studies acquisition inputs and the acquired image, looking for errors and patient irregularities. When it detects anomalies, it displays explanations and instructions. CAD helps speed throughput and reduces errors. It also helps technologists provide information to the interpreting physician.

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Physician: 81646 AM (T.51)  
Referral: 611080  
Analysis: 811080 AM (T.51)

Site	Young Adult T-Score	Age-Adjusted T-Score	BMD Classification
L1-L4	1.4	1.1	Normal
Spine	0.8	0.8	Normal
Left Hip	0.8	0.8	Normal
Right Hip	0.8	0.8	Normal



## A platform for productivity. Today and tomorrow.

A state-of-the-art fracture risk assessment tool, Prodigy will serve your needs exceptionally – today and far into the future. It fits today's ideal: complete patient information available to those who need it – anywhere, anytime.

### **Digital connectivity and network integration provide fast, widespread communication.**

enCORE software lets you digitally transmit bone density results throughout your healthcare enterprise – or anywhere in the world via the internet – for viewing on remote workstations. You can easily and instantly share patients' results with specialists or referring physicians.

### **Exclusive DICOM and HL7 compatibility ensures maximum connectivity.**

Optional Prodigy DICOM connectivity seamlessly integrates densitometry results with Radiology Information Systems (RIS) and Picture Archival and Communication Systems (PACS). Digital densitometry results may then be viewed on remote DICOM workstations. With Worklist, your system can receive patient information directly from scheduling applications via HL7 or DICOM for faster throughput and reduced data entry errors.

### **TeleDensitometry™ speeds reports to reading or referring physicians.**

The ultimate in convenience, optional TeleDensitometry lets you send digital, paperless reports as faxes, or as simple e-mail attachments that recipients can view on any personal computer, without special software. The digital report contains all the information found in the standard hard-copy report, including patient information, high-resolution images, a reference graph, a clinical results table and a trending graph to monitor changes over time.





**The DEXTER. BMD anywhere, anytime.**

The optional Dexter software lets you read BMD analysis on -the-go. BMD reports are synchronized to the Dexter from your DXA workstation to display BMD images, patient demographics, analysis, trending, and the physician report. You can conveniently qualify analysis by entering or dictating a response anytime, anywhere.



**GE Continuum protects your investment.**

To keep your bone densitometry and assessment capabilities current through rapid advances in technology, you can easily add new features and applications to your Prodigy Vision's system as economical software upgrades. Its your assurance of state-of-the-art system performance for years to come.



*Comprehensive Clinical Capabilities*

- *Advanced Hip Assessment*
- *Dual-Energy Vertebral Assessment*
- *Total Body Assessment*
- *AP Spine*
- *Forearm*
- *Orthopedic Analysis*
- *Ultra Low-Dose Pediatrics*

For more than 100 years, healthcare providers worldwide have relied on GE Medical Systems for medical technology, services and productivity solutions.

So no matter what challenges your healthcare system faces— you can always count on GE to help you deliver the highest quality healthcare.

For details, please contact your GE representative today.

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