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## Healthcare Re-imagined

GE is dedicated to helping you transform healthcare delivery by driving critical breakthroughs in biology and technology. Our expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, and biopharmaceutical manufacturing technologies is enabling healthcare professionals around the world to discover new ways to predict, diagnose and treat disease earlier. We call this model of care "Early Health." The goal: to help clinicians detect disease earlier, access more information and intervene earlier with more targeted treatments, so they can help their patients live their lives to the fullest. Re-think, Re-discover, Re-invent, Re-imagine.

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GE Healthcare

# Lunar Achilles InSight

Simplicity and dedication



# Fracture risk assessment

**GE Healthcare – Lunar** is dedicated to developing innovative and productive bone assessment systems to help clinicians assess and diagnose osteoporosis. Our dedication to the fight against osteoporosis is reflected in our annual breakthroughs where we bring new technology and clinical enhancements to physicians and researchers around the globe.

**The Achilles InSight** is a proven bone ultrasonometer that brings fracture risk assessment to the forefront of healthcare. The real-time image of the calcaneus and the Region of Interest (ROI) ensures that the measurement is accurate and precise. The speed of the measurement, a mere 15 seconds, also reduces measurement error introduced by patient movement. Numerous clinical studies show that ultrasonometry of the heel using Achilles is an economical and reliable complement to DXA.<sup>2,3,4,5,6</sup>

Testing is fast and you get immediate results enabling you to counsel patients and make sound treatment decisions.

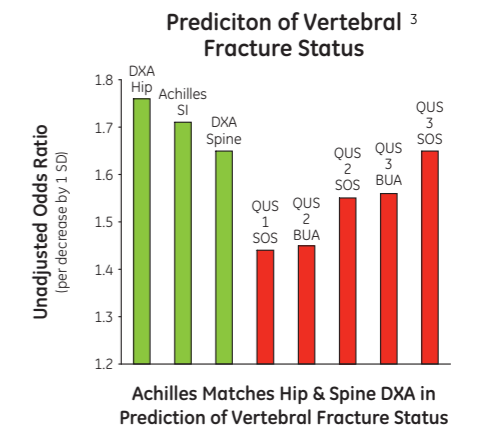
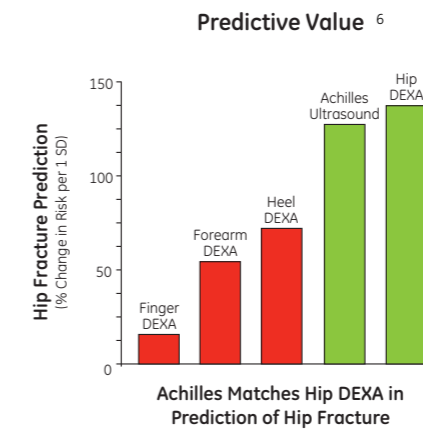
Achilles InSight fits in less than two square feet of office space. Easy to take on the road, to satellite offices, nursing homes, or outreach programs. Achilles' portability makes it ideal to use as an early assessment tool for identifying patients for DXA scans. The complete system weighs just 24 lbs (11kg) and the ergonomic design makes it easy to carry. Just slip it into the front seat or trunk of your car and you are ready to travel.

Online training videos: [http://www.gehealthcare.com/usen/bone\\_densitometry/products/achilles.html](http://www.gehealthcare.com/usen/bone_densitometry/products/achilles.html)

## Calcaneus: A good site for fracture risk assessment<sup>1</sup>

Evidence supports the calcaneus as the optimum peripheral site for fracture risk assessment.

- Easy accessibility
- High trabecular content
- Weight bearing
- Proven predictive of hip fracture risk.<sup>2,6</sup>
- Proven predictive of vertebral fracture status<sup>3,4,5</sup>



# Confidence on the go!

## Complete exams with confidence in less than one minute.

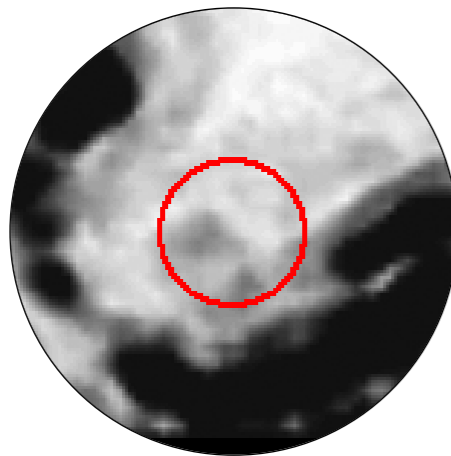
Achilles InSight reports are concise and easy to interpret. The patient's result is expressed as a T-score and as a percentage compared to the reference population. The results are also graphed against the reference population.

## SmartDry technology

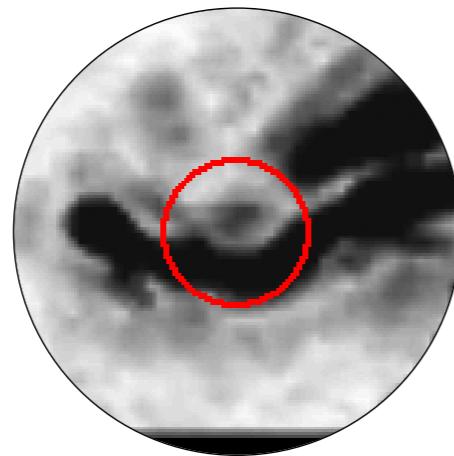
With SmartDry technology you will not sacrifice precision or convenience. SmartDry keeps the foot dry by using water encapsulated in membranes that conform closely to the patient's foot and are temperature controlled, reducing variation. SmartDry's "closed-water system" requires virtually no maintenance and measurement and clean-up are easy since isopropyl alcohol or ethanol are used as coupling agents.

## Real-time image

The real-time image eliminates a "blind" measurement and may help improve measurement confidence across different heel anatomies.



Good positioning



Poor positioning

## Backed by solid science

The Achilles ultrasonometer has been proven in prospective studies to predict fracture risk in post-menopausal women, ages 45 to 75+ years. These studies show Achilles to be as effective as DXA of the femur in predicting hip fracture risk.<sup>2,6,7</sup>

Three large population-based studies proved that QUS of the calcaneus worked as well as central DXA for identification of women at high risk for prevalent osteoporotic vertebral fractures.<sup>3,4,5</sup>

In a direct comparison to other QUS devices the Achilles Stiffness Index was the most sensitive to vertebral fracture status.<sup>3</sup>

## Monitor treatment

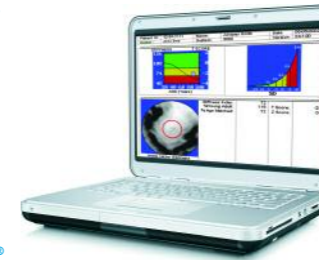
Achilles has been proven to have precision suitable for monitoring bone changes through aging or in response to therapy.<sup>8</sup>

## Transport your system easily and safely.

Make transport convenient with an optional, soft-sided, bag and cart. Protect your unit during air travel with a custom hard-sided flight case.



# Designed to suit your needs



## Automated and self-contained

The standard system is an automated and self-contained unit with an internal printer. The on-board memory stores up to 300 patient results, which you can review or print at your convenience. Printouts are easily attached to permanent patient records.

- **External printer capable**  
Provides full size, color printing of patient measurement results: exam information, WHO graph, and fracture risk graph.

## DICOM

DICOM (Digital Imaging and Communications in Medicine) is a standard for transferring digital media images and associated information between devices. The DICOM standard specifies information that vendors must supply about their product, when the product claims to be DICOM standard compliant.

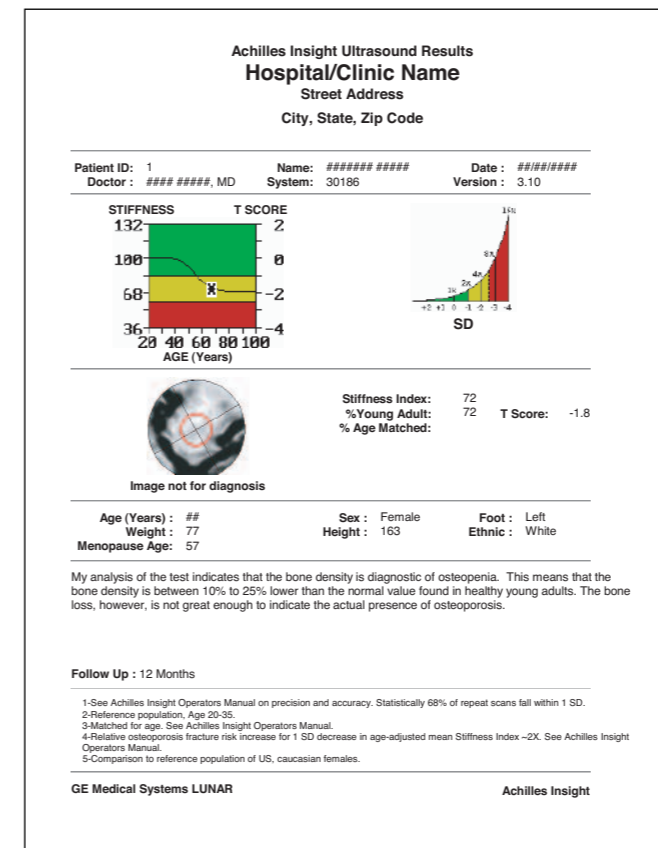
Lunar's DICOM Conformance Statement defines what DICOM protocols our product includes and the details it uses in communication with an existing Picture Archiving Communications System (PACS) or Radiology Information Server (RIS).

## Achilles OsteoReport®

The Achilles OsteoReport is an external PC software option that expands the functionality of the Achilles ultrasonometers. Productivity is increased by keyboard entry of patient and exam information. New patients can be entered or prior exam results retrieved and reviewed at any time.

Exam results are displayed, stored and printed including measurement values and WHO and Fracture Risk color graphs for easy clinical assessment and visual communication for the patient. The user may select printing of the Exam Results, the Clinical Report or the My Achilles Test documents.

Patient exam education is provided by My Achilles Test, a text document that can be easily personalized by the clinical facility. Multiple languages can be implemented by the user with a built-in translation tool. The OsteoReport is compatible with Windows.



## References:

1. Marshall D, Johnell O, Wedel H (1996) Meta-analysis of how well measures of bone mineral density predict occurrence of osteoporotic fractures. *BMJ* 312(7041):1254-1259
2. Marc-Antoine Krieg et al Prediction of Hip Fracture Risk by Quantitative Ultrasound in More Than 7000 Swiss Women >= 70 years of Age: Comparison of Three Technologically Different Bone Ultrasound Devices in the SEMOF Study. *JBMR* Volume 21, Number 9, 2006
3. Claus C Gluer et al Association of Five Quantitative Ultrasound Devices and Bone Densitometry With Osteoporotic Vertebral Fractures in a Population-based Sample: The OPUS study. *JBMR* Volume 19, Number 5, 2004
4. B. Frediani et al Calcaneus Ultrasonometry and Dual-Energy X-Ray Absorptiometry for the Evaluation of Vertebral Fracture Risk. *Calcif Tissue Int* (2006) 79:223-229
5. F. Hartl et al Discriminatory Ability of Quantitative Ultrasound Parameters and Bone Mineral Density in a Population-Based Sample of Postmenopausal Women With Vertebral Fractures: Results of the Basel Osteoporosis Study
6. Hans et al Ultrasonographic Heel Measurements to Predict Hip Fracture in Elderly Women: The EPIDOS Prospective Study. *The Lancet*, Vol 348:511-514, 1996
7. Paul W. Thompson et al Quantitative Ultrasound (QUS) of the Heel Predicts Wrist and Osteoporosis-Related Fractures in Women Age 45-75 Years. *Journal of Clinical Densitometry*, Vol 1, No. 3, 219-225, Fall 1998.
8. S. Gonnelli et al Heel Ultrasonography in Monitoring Alendronate Therapy: A Four-Year Longitudinal Study. *Osteoporosis Int* (2002) 13:415-421

## Technical specifications:

### Precision in vivo

- 2.0% CV in osteoporotic patients

### Patient throughput

- 15-second measurement (Stiffness Index)

### Signal analysis

- Real-time, Fourier transform analysis with directional measurement and convergence algorithms

### Ultrasonometry transducers

- Fluid-coupled, through transmission (95 mm distance)
- Quarter wave-matched, broadband coaxial element transmission, 25mm/85mm circular
- Multiple element reception
- Center frequency 500 kHz, unfocused
- 588 element receiver array, 90 mm diameter

### Results

- STIFFNESS Index with WHO graph
- T-score and % Young Adult
- Z-score and % Age-Matched

### Display

- Color LCD touch screen with graphical display
- 14 cm (5.5 in) measured diagonally
- Tilts and inverts display for optimal viewing

### Printer

- Integrated microline thermal printer with graphical printout.
- Supports specific external printers

### Fluid coupling system

- Fully automated and self-contained
- Heated to 33°C (92°F)
- Replaceable silicone membranes
- Coupling agents: Isopropyl alcohol or ethanol (70%)

### Electrical requirements

- 100-240 Volts, 50/60Hz @ 5A

### Physical factors

- Integrated transportable design
- Dimensions (WxHxD): 31x28x56 cm (12x11x22 in)
- Operating temperature range: 15°C - 35°C (59°F - 95°F)
- Humidity: 20-80%
- Weight: 11.5 kg (25.4 pounds)

### Multiple reference populations

### Options

- Achilles OsteoReport
- Hard or soft carrying case
- DICOM

The Achilles InSight ultrasonometer measures ultrasound variables of the os calcis to provide a clinical measure called Stiffness Index. The **Stiffness Index** indicates risk of osteoporotic fracture in postmenopausal women comparable to bone mineral density (BMD) as measured by x-ray absorptiometry at the spine or hip. **Stiffness Index** results expressed as T-scores are used to assist the physicians in the diagnosis of osteoporosis in the same way as are t-scores or obtained by x-ray absorptiometry. Either the **Stiffness Index** T-score or x-ray absorptiometry t-score can be utilized by a physician, in conjunction with other clinical risk factors, to provide a comprehensive skeletal assessment. The Stiffness Index has a precision error in older women comparable to that of x-ray absorptiometry, which makes it suitable for monitoring bone changes.