Chapter 1 Overview

1.1 Indications for Use

1.1.1 APEX Indications

The APEX™ for QDR™ X-ray Bone Densitometers is indicated for the estimation of bone mineral density (BMD), comparison of measured variables obtained from a given QDR scan to a database of reference values, the estimation of fracture risk, vertebral deformity assessment, body composition analysis, and discrimination of bone from prosthetics using the Hologic QDR X-ray Bone Densitometers.

1.1.2 IVA Indications

IVA scans are intended for the visualization or quantitative assessment of vertebral bone deformities. IVA also allows the visualization of abdominal aortic calcification, and, if present, clinical correlation may be advised since abdominal aortic calcification may be associated with cardiovascular disease.

1.1.3 Body Composition Indications

The Hologic Whole Body DXA Reference Database software used on Hologic QDR bone densitometers measures the:

- regional and whole body bone mineral density,
- lean and fat tissue mass, and
- calculates derivative values of:
  - bone mineral content
  - area
  - soft tissue mass
  - regional soft tissue mass
  - total soft tissue mass
  - fat free mass
  - regional and total soft tissue mass ratios
  - % fat, regional
  - % fat, total body
  - % fat, android
  - % fat, gynoid
  - % fat, android/gynoid ratio
  - body mass index

The values can be displayed in user-defined statistical formats and trends with color image mapping, and compared to reference populations at the sole discretion of the health care professional.

These body composition values are useful to health care professionals in their management of diseases and conditions where the disease and conditions itself, or its treatment, can affect the relative amounts of fat and lean tissue. The Hologic Whole Body DXA Reference Database software does not diagnose disease, recommend treatment regimens, or quantify treatment effectiveness. Only the health care professional can make these judgments. Some of the diseases (and conditions) for which body composition values are useful include chronic renal failure, anorexia nervosa, obesity, AIDS/HIV, and cystic fibrosis. DXA body composition is a useful alternative to hydrostatic weighting and skin fold measurements.

1.1.4 Visceral Fat Software

The Hologic Visceral Fat Software used on Hologic Horizon® bone densitometer total body scans estimates the visceral adipose tissue (visceral fat) content within the android region in an adult male or female population, excluding pregnant women. The content that is estimated is the Visceral Fat Area, Visceral Fat Mass, and Visceral Fat Volume. These values can be displayed in user-defined statistical formats and trends.

The estimated visceral fat content is useful to health care professionals in their management of diseases/conditions where the disease/conditions itself, or its treatment, can affect the relative amounts of visceral fat content in the android region.

Note
The Hologic Visceral Fat Software does not diagnose disease, recommend treatment regimens, or quantify treatment effectiveness. Only the health care professional can make these judgments.

Some of the diseases/conditions for which visceral fat estimation is useful include hypertension, impaired fasting glucose, impaired glucose tolerance, diabetes mellitus, dyslipidemia, and metabolic syndrome.

1.1.5 10-year Fracture Risk Indications

Femoral neck BMD and clinical risk factors are used to estimate 10-year risk of hip fracture and 10-year risk of major osteoporotic fracture using the World Health Organization (WHO) algorithm (FRAX®) in adults. The physician may use the 10-year fracture risk, along with the physician's knowledge of patient history, and apply medical expertise and best practice clinical judgment to determine if therapeutic intervention is indicated.

1.1.6 Hip Structure Analysis Indications

The Hip Structure Analysis (HSA®) for QDR X-ray Bone Densitometers uses data from conventional Dual Energy X-ray Absorptiometry (DXA) scans to measure the distribution of bone mineral mass at specific cross sections of the hip and allows the physician to estimate structural properties of the hip, such as CSA, CSMI, Z and Buckling Ratio.

7.4 Analyzing the Scan

1. Select Analyze Scan.
2. If there is a prior scan, click Results.

   If there is no prior scan, click Next >>. A histogram appears to the right of the image in a window during all the analysis steps. It is intended to aide in the placement of intervertebral lines.

   Select the >> button at the upper right, to expand and the << button to contract the window.

   You can configure the histogram from the DXA*pro* configuration screen. Refer to Configuring the System in the *MAN-03648 Horizon Reference Manual.*

7.4.1 One-Time™ Auto Analysis 3.7

When auto-analysis is complete, results are displayed.

Note
If Auto-Analysis is unsatisfactory, perform a manual analysis for correct analysis.

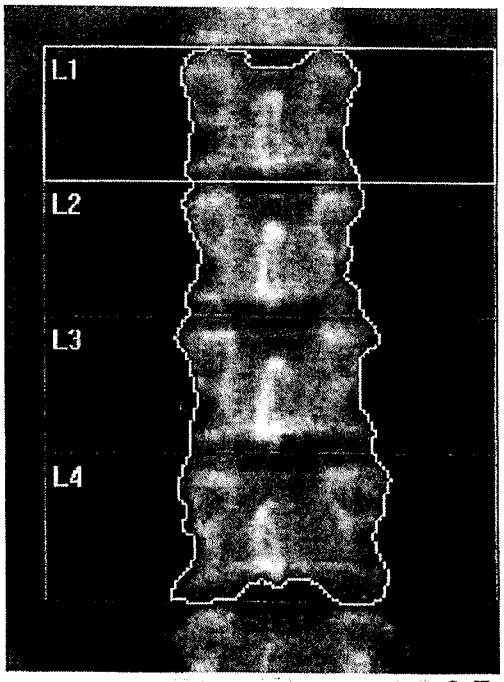

Figure 7: AP Lumbar Spine Analysis 3.7

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๒.ลงชื่อ.....กรรมการ
๓.ลงชื่อ.....กรรมการ

8.4.1 One-Time Auto Analysis 3.7

When auto-analysis is complete, results are displayed.

Note
If Auto-Analysis is unsatisfactory, perform a manual analysis. For correct analysis, see the following figure.

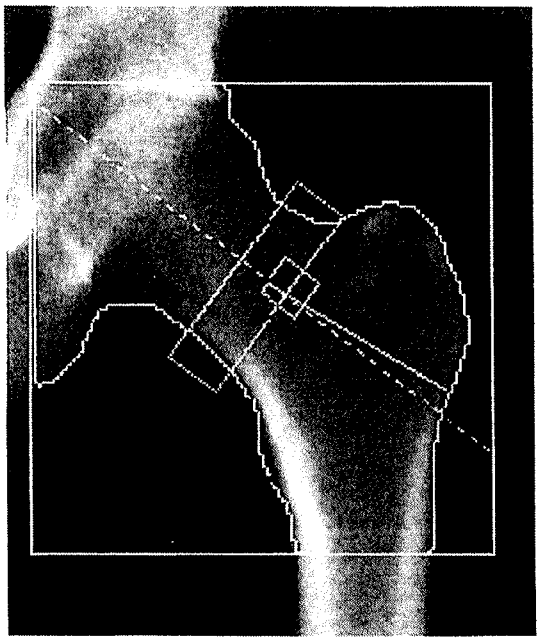

Figure 13: Properly Analyzed Hip Scan 3.7

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10.10 Enable NHANES BCA 3.17

To enable NHANES BCA go to the APEX Main Menu, select **Utilities, System Configuration, Analyze** tab and select the **Enable NHANES BCA** check box. Select this option to apply the calibration recommended by Schoeller *et al.*[1] When enabled, NHANES BCA will be noted in the BCA results section.

[1] Schoeller DA, Tylavsky FA, Baer DJ, Chumlea WC, Earthman CP, Fuerst T,Harris TB,Heymsfield SB, Horlick M, Lohman TG, Lukaski HC, Shepherd J, Siervogel RM, Borrud LG "QDR 4500A dual-energy X-ray absorptiometer underestimates fat mass in comparison with criterion methods in adults." Am J Clin Nutr. 2005;81(5):1018-25.

10.11 Generating and Printing Reports

See *Reports* on page 113.

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๒.ลงชื่อ.....กรรมการ

๓.ลงชื่อ.....กรรมการ

View a History of Sent Reports

Click the **View Log** button on the *View Queue* dialog box.

Update the status of DICOM Reports in the Queue

Click the **Refresh** button on the *View Queue* dialog box.

Delete a DICOM Report from the Queue

Click the **Delete** button on the *View Queue* dialog box.

20.6.8 Close a DICOM Report

Click the **Cancel** button or the **<<Back** button on the *DICOM Report window.*

20.7 DxReport

20.7.1 Create a DxReport

1. Select Interpreting Physician
2. Check or uncheck Include rate of Change
3. Click Generate DxReport

A Word report will be generated in accordance with the configuration settings see *DxReport Users Guide* MAN-02331.

Caution *A qualified medical professional must review each patient report that DxReport generates before the report is released.*

21 Interpreting Results

Websites:

- www.iscd.org - Particularly, the ISCD Official Positions 3.17
- www.nof.org - Particularly, the NOF Physician's Guide
- www.iofbonehealth.org - Particularly, Health Professionals, including Educational Tools and Slide kits.
- http://www.aace.com - American Association of Clinical Endocrinologists

Publications:

- U.S. Department of Health and Human Services. Bone Health and Osteoporosis: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, Office of the Surgeon General, 2004.
- Kanis, JA on behalf of the World Health Organization Scientific Group (2007), Assessment of osteoporosis at the primary health