

NUCLEAR MEDICINE

BONE DENSITOMETRY

THYROID ULTRASOUND

ENDOCRINOLOGY

chatswood nuclear medicine  
& endocrinology



Winter 2012

## Latest News: Full NATA Accreditation

Chatswood Nuclear Medicine & Endocrinology is pleased to announce the completion of full Diagnostic Imaging Accreditation with NATA (the National Association of Testing Authorities). **This certifies that all diagnostic imaging performed at our facility conforms to the highest Medicare standards in Australia.**

In recognition of our accreditation, NATA has offered its logo for display on our premises and stationery. It is **NATA's assurance to you of our integrity and standards.**



## Nuclear Medicine Tips and Secrets: Are all Cameras the Same?

The latest generation of Nuclear Medicine cameras boasts a vast improvement in resolution of SPECT tomographic images. While a standard camera is capable of resolutions of 10 mm, the latest technology utilising FLASH 3D allows us to obtain a resolution of 3.7 mm. We are able to see lesions almost 3 times as small!

To ensure that you always have the best diagnostic tools available for your patients, **make sure that your patients have their scans performed using Flash 3D.**

Chatswood Nuclear Medicine & Endocrinology routinely performs all SPECT scans using this revolutionary advancement.

**"Flash 3D has helped us to increase diagnostic accuracy by over 20%"**

James R. Corbett M.D.  
Professor of Radiology and Internal Medicine  
University of Michigan Health System  
Ann Arbor, MI, USA



Multiple rib lesions:  
Standard SPECT image



The same image with Flash 3D. Note the obvious improvement in image quality

## DXA Tips and Secrets: Comparing Scans from Different DXA Scanners

*Ms LW is a 70-year-old female who was diagnosed with osteoporosis in 2000, with T-scores of  $-2.5$  in the lumbar spine and  $-2.6$  in the left femoral neck. Lifestyle advice was provided. When she re-presented to the same practice for a follow-up scan in 2004, the previous machine (Norland) had been replaced with a scanner from a different manufacturer (Lunar DPX). The progress study showed deterioration with T-scores of  $-3.3$  in the lumbar spine and  $-3.2$  in the left femoral neck (using a conversion equation to estimate the change in bone density). As a result the decision was taken by her GP to commence oral bisphosphonates. A further study was performed in 2009 at the same practice, and by this time there was a change in staff, resulting in the spinal level being mislabelled with an (invalid) T-score of  $-2.5$  for the L3-L5 level, and  $-3.1$  in the left femoral neck.*

*In 2011 Ms LW was referred to us for a progress DXA scan on a Lunar Prodigy scanner. The T-score was  $-2.4$  in the lumbar spine, and  $-3.1$  in the left femoral neck. These values were not significantly different from the last study (performed using the Lunar DPX scanner), and reflects an improvement of 15.6% in the lumbar spine, but little change in the proximal femur, since the commencement of oral bisphosphonates in 2004. The results are well within expectations following initiation of therapy.*

Clinical endocrinologists routinely treat patients with osteoporosis in their practice, and are charged with the responsibility of treating and monitoring bone loss. As described in the vignette above, we inevitably come across patients who have had DXA scans performed at different centres during the course of their lives.

Although the traditional recommendation is for all scans over the course of a patient's lifetime to be undertaken at the same practice, on the same scanner, and by the same staff member, this is usually not practical or possible for many patients in today's highly mobile society. A corollary would be to insist on all patients always having their blood pressure checked by the same doctor, using the same sphygmomanometer, and at the same time of the day, before a change in therapy is initiated!

However there are a few simple rules that can be followed to ensure that a **clinically relevant change** in bone density can be reliably detected:

1. Always make sure that the scans are of high quality, performed, by staff who have an interest in clinical bone densitometry, and at practices with a record of commitment to diagnostic excellence. Unfortunately having repeated scans at the same practice does not necessarily guarantee the above.
2. It is easier to compare apples with apples. Scanners from the same manufacturer (such as Lunar) typically have a variation of less than 1% between scanners. A conversion equation is required for comparisons between manufacturers, but often with variations of 1 to 5%. A simpler method is to look for differences in T-scores.
3. Remember that the aim of pharmacotherapy is maintenance of bone density. Following initial improvement in the first 12 to 24 months, treatment efficacy is inferred by the absence of significant deterioration in measurements. This nevertheless translates to a reduction in fracture risk of approximately 50% as long as the above is met.
4. Always ask if you are not certain. Endocrinologists, rheumatologists and geriatricians have a subspecialty interest in osteoporosis, and may perform and interpret DXA scans in their rooms for their own clinical

