



OSTEOS NEWSLETTER

DOUBLE ISSUE 4.2 & 4.3

Newsletter of the Lebanese Society for Osteoporosis and Metabolic Bone Disorders

Editor-in-Chief: Asma Arabi, M.D, MSc

Welcome Note

Dear Colleagues,

Osteoporosis is a "silent epidemic" par excellence, especially in the Middle East and Africa. Indeed, an Audit on the Epidemiology, Costs and Burden of Osteoporosis in Middle East and Africa that collected information on the epidemiology, Burden and costs of osteoporosis from 17 countries of the region showed that osteoporosis is a neglected disease in the Middle East and Africa. The Audit project and report was conducted by a Lebanese Team led by Dr. Ghada El-Hajj Fuleihan Steering Committee leader and lead Author of the Audit, and included Drs. Najla Itani, Rafic Baddoura and Asma Arabi. The report was prepared with participation of the Pan Arab Osteoporosis Society, and was recently released by the International Osteoporosis Foundation at the First Regional IOF meeting in Dubai Oct 19-22. This report revealed that the level of awareness among primary health care professionals was estimated as poor to medium in many countries, and allied health professionals were in general ill-equipped to take care of patients with osteoporosis. Moreover, osteoporosis is not integrated in the medical school curricula and is not considered a health priority in most countries of the region. This report identified gaps in knowledge and care that are relevant to the region and highlighted the urgent need to increase awareness. Key findings of the report are summarized in this issue of the newsletter, and the whole report as well as relevant press releases can be accessed both in Arabic and English on the OSTEOS website www.osteos.org.lb

MISSION OF OSTEOS

To enhance state-of-the-art knowledge and expert care for osteoporosis and other metabolic bone disorders in Lebanon through education, research and service.

READ IN THIS ISSUE

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 - **OSTEOS 3rd Annual Meeting, Dec 2-3, 2011**
 - **ISCD Body Composition Course, Dec 1, 2011**
 - **ISCD Osteoporosis Academy Course at AUB, Feb 3-4, 2012**
- Upcoming meetings

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**EPIDEMIOLOGY, COSTS AND BURDEN OF OSTEOPOROSIS IN
MIDDLE EAST & AFRICA
THE IOF 2011 AUDIT KEY FINDINGS**

**HIGH FRACTURE RATES THROUGHOUT
THE REGION AND MAJOR INCREASES
PREDICTED BY 2050**

- Subjects over age 50 will account for 40% in 2050. The anticipated secular trends with increased urbanization throughout the region, account for the highest projected proportional increase in hip fracture rates compared with many other regions worldwide.
- Iran accounts for 0.85% of the global burden of hip fractures and 12.4% of the burden of hip fractures in the Middle East.
- National Hip Fracture Registry data, established by the Ministry of Health in Lebanon in 2006, showed that the number of hip fractures in individuals over the age of 50 averages 1200-1400/year. It is anticipated that crude incidence rates/100,000 will almost double by 2050.
- It is estimated that there are 1008 hip fractures/year in Jordan. This number will quadruple by 2050.
- In Syria, there are approximately 4000 hip fractures/year with this number set to be 15 000- 20 000 cases by 2050.
- In Turkey more than 24 000 hip fractures occurred annually subjects aged 50 years and over in 2010, and 36,000 are projected for 2020.
- In 2010, the estimated yearly number of hip fractures above age 50 years in Saudi Arabia was 90003.

**FRACTURES: A HUGE PERSONAL, SOCIAL &
ECONOMIC BURDEN**

- Mortality rates post-hip fracture may be 2-3 folds higher in this region than those reported in western populations.
- A retrospective chart review of 274 patients admitted between 1992 and 2002 with an osteoporotic hip fracture to a tertiary referral centre in Beirut, the mortality rate in a subset of the original cohort was 47%. 70% of those who died did so within the first year.
- One study from Turkey included 92 hip fracture patients (56 females, 36 males) reported a 3-year mortality rate of 61% in females and 50% in males.
- Another retrospective study from Saudi Arabia reported an average 2-year mortality rate of 27%.
- Several countries reported loss of productivity post-hip fractures ranging from 3-6 months. One study from Lebanon reported that 80% of patients with a hip fracture will ultimately regain normal walking.

OSTEOPOROSIS: A NEGLECTED DISEASE

- The 2010 WHO Global Status report underscored the importance of several non-communicable diseases, including cardiovascular diseases, DM, obesity, cancer and COPD, but osteoporosis was noticeably omitted. In Turkey, DM and COPD have higher importance than osteoporosis.
- The level of awareness among primary health care professionals is estimated as poor to medium in many countries.
- Allied Health Professionals are in general ill-equipped to take care of patients with osteoporosis in many countries.
- The level of awareness in certain specialties, most often endocrinology, rheumatology, and sometimes orthopedics and obstetrics/gynecology, is estimated as medium to good in Jordan, Iran, Iraq, Lebanon, Morocco, Palestine, Syria, Turkey and United Arab Emirates.
- Osteoporosis is not integrated in the medical school curricula in most countries with the exception of Lebanon and Morocco.

LIMITED ACCESS TO DIAGNOSTIC TOOLS

- Most countries have limited numbers of DXA machines.
- In Iraq the distribution of DXA machines is 0.5 per million and in Morocco it is 0.6 per million.
- In contrast, Turkey and the United Arab Emirates have > 10 DXA machines/ million, and in Lebanon the number reaches 20/ million population, if only FDA approved DXAs are taken into consideration.
- For comparison, in Europe approximately 60% of member states have at least 10.6 DXA machines/ million populations.
- In many countries DXAs are generally only available in urban areas. Thereby are beyond the reach of a large proportion of the population.



*EPIDEMIOLOGY, COSTS AND BURDEN OF OSTEOPOROSIS IN
MIDDLE EAST & AFRICA
THE 2011 IOF AUDIT KEY FINDINGS*

**EDUCATION AND LIFESTYLE
PREVENTION PROGRAMS**

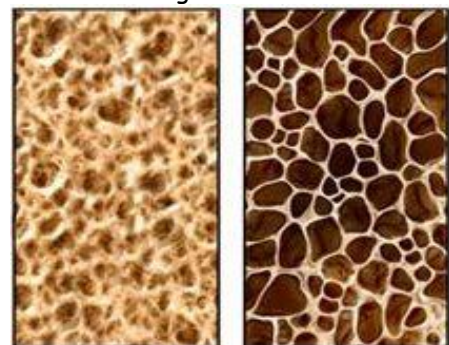
- Of the three regional audits recently conducted by IOF (Asia; Eastern Europe & Central Asia; Middle East & Africa) the Middle East and African region has by far the youngest population. The challenge is to stimulate such a young audience and to conduct effective education program to increase general public awareness of the problem.
- In many countries in the audit no general education or lifestyle programmes are carried out, such as in Egypt, Morocco and Jordan.
- In Kenya and Iran, there are however government public awareness programmes regarding prevention, diagnosis and management of osteoporosis and fragility fractures.
- There is generally a low level of osteoporosis awareness in the countries included in this audit.

**GUIDELINES, GOVERNMENT
ENDORSEMENT AND GOVERNMENT
POLICY**

- Osteoporosis is considered a health priority in only 3 out of the 17 countries included in this audit (Iran, Iraq and Jordan).
- National Osteoporosis guidelines are reported to be available in five countries: Egypt, Iran, Iraq, Lebanon and South Africa. Such guidelines are officially endorsed by the Ministry of Health and in two countries, Lebanon and Iraq and pending endorsement in Iran and South Africa.

VITAMIN D DEFICIENCY

- Despite ample sunshine, the Middle East (15°-36°N) and Africa (35°S-37°N), register the highest rates of rickets worldwide.
- The prevalence of hypovitaminosis D has been estimated to range between 50-90% in most countries and across age groups, depending on the threshold chosen.
- Consistent predictors of low levels of 25(OH)-vitamin D are older age, female gender, multi-parity, the season, conservative clothing style, low socioeconomic status and urban living.
- Vitamin D levels are lowest in the summer in some gulf countries due to the scorching heat during that season which keeps people indoors.
- International recommendations and guidelines regarding desirable doses and levels may not readily apply to populations from the region.



GUIDELINES FOR EVALUATION, TREATMENT, AND PREVENTION OF VITAMIN D DEFICIENCY

The Endocrine society issued its guidelines for the evaluation, treatment, and prevention of vitamin D deficiency with an emphasis on the care of patients who are at risk for deficiency.

The guidelines were published in the Journal of Clinical Endocrinology and Metabolism earlier this year.

The Task Force was composed of a Chair (M Holick), six additional experts and a methodologist (Neil C. Binkley, Heike A. Bischoff-Ferrari, Catherine M. Gordon, David A. Hanley, Robert P. Heaney, M. Hassan Murad, and Connie M. Weaver).

Considering that vitamin D deficiency is very common in all age groups and that few foods contain vitamin D, the Task Force recommended supplementation at suggested daily intake and tolerable upper limit levels, depending on age and clinical circumstances. The dietary intake recommendations differ significantly from those given by the IOM and summarizes as follows:

- Infants ages 0-1: 400-1,000 IU/day
- Children ages 1-18: 600-1,000 IU/day
- Adults ages 18+: 1,500-2,000 IU/day
- Pregnant or nursing women under 18: 600-1,000 IU/day
- Pregnant or nursing women 18+: 1,500-2,000 IU/day
- Obese children and adults: at least 2-3 times the recommendation for their age group
- Children and adults on anticonvulsants, antifungals and AIDS medications: at least 2-3 times the recommendation for their age group

The Task Force also suggested the measurement of serum 25-hydroxyvitamin D level by a reliable assay as the initial diagnostic test in patients at risk for deficiency.

Treatment with either vitaminD2 or vitaminD3 was recommended for deficient patients.

At the present time, the Task Force does not recommend screening individuals who are not at risk for deficiency.

The Task Force recommended maintaining blood concentrations of 25(OH)2D consistently above 30 ng/mL. A level that is substantially higher than what the IOM recommended last year (20 ng/ml).

Holick MF et al. Evaluation, Treatment, and Prevention of Vitamin D Deficiency: and Endocrine Society Clinical Practice Guideline. J Clin Endocrinol Metab 2011; or join us at the OSTEOS 3rd annual meeting where we will have the opportunity of meeting with the Task Force Chair (M Holick) and other International Vitamin D experts.

THE ASBMR 2011 ANNUAL MEETING

The ASBMR Annual Meeting was held in San Diego last September. The meeting brought together over 4,600 attendees from over countries to learn about the latest advances in bone and mineral research. We selected few abstracts presented at the meeting and summarized them in the current issue of our newsletter. For more highlights of scientific sessions from this prestigious meeting, visit the ASBMR website www.asbmr.org. You can also view and enjoy access to select webcasts from the meeting as well as summary slides <http://www.asbmr.org/PresentationSlides.aspx> . Available webcasts include the following sessions:

- Micro RNA Control of Muscle Development and Disease
- Osteocytes: The Great Communicators
- ASBMR/ECTS Clinical Debate - Calcium Supplementation Is Safe and Effective
- Muscle and Bone Interactions
- Lipotoxicity: Bad to the Bone
- Novel Genetic and Epigenetic Approaches to Human Disease
- Clinical Roundtable: Anabolic Agents for Fracture Repair
- Clinical Roundtable: Managing Musculoskeletal Disease in Chronic Renal Insufficiency
- Clinical Roundtable/Case Conference - Monitoring Osteoporosis Therapy - To Scan or Not to Scan?
- Clinical Update for Health Professionals
- Clinical Update for Health Professionals - IOM Report on Vitamin D
- Clinical Evening at ASBMR
- Meeting Overview for Health Professionals
- Regulatory Opportunities and Challenges in Osteoporosis.

HIGHLIGHTS FROM THE ASBMR 2011 ANNUAL MEETING

NEW TREATMENT FOR PRIMARY HYPERPARATHYROIDISM?

PTH 1-84 IN PRIMARY HYPERPARATHYROIDISM. ABSTRACT # 1097, BY CUSANO ET AL.

Hypoparathyroidism (HypoPT) is the only endocrine deficiency that is not treated with the deficient hormone. Standard treatment is oral calcium and vitamin D but maintaining normal serum calcium levels can be a therapeutic challenge. Cusano et al assessed the 48 months effect of PTH (1-84) in HypoPT. 18 patients aged 49 ± 13 year with HypoPT were treated with PTH (1-84) $100 \mu\text{g}$ for 4 years. Biochemistries and BMD were measured every 6 months. Ca requirements decreased by 36% from baseline to 48 months; $p < 0.01$, and calcitriol requirements fell from 0.6 ± 0.7 to $0.4 \pm 0.5 \mu\text{g/d}$; but the difference did not reach statistical significance. Only 3 subjects were able to stop all calcitriol. Serum Ca levels remained stable, Phosphorus levels fell from 4.4 ± 0.2 to $4.0 \pm 0.2 \text{ mg/dl}$ ($p < 0.0001$) and urinary Ca fell from $277 \pm 26 \text{ mg/d}$ to 181 ± 28 at 12 months ($p = 0.007$), remaining lower throughout the study. Spine BMD increased by $6.0 \pm 1.2\%$ at 48 months ($p < 0.0001$). T HIP & FN BMD remained unchanged throughout the study while distal radius BMD fell slightly ($-1.8 \pm 0.8\%$) over the first 24 months ($p = 0.03$), not changing further at 48. There were only 3 transient episodes of mild hypercalcemia in 3 subjects over 4 years.

NEW INDICATION FOR PTH 1-84?

PTH 1-84 AND FRACTURE HEALING. ABSTRACT # 1199, BY HOLZER ET AL

Because of its anabolic effect, the ability of PTH to improve fracture healing was tested in a few studies. In this study, the effect of PTH 1-84 on the course of fracture healing and functional outcome was tested prospectively in postmenopausal women receiving PTH 1-84 for the treatment of osteoporosis and conservatively treated pelvic fractures without requiring surgery. 65 patients (mean age: 82.8 years) participated in the study. They all had plain x-rays and a computer tomography (CT) scan to verify fractures and were scanned for osteoporosis. Twenty-one patients received a once daily injection of $100 \mu\text{g}$ PTH 1-84 starting within two days after admission to the hospital, Forty-four patients without PTH treatment served as a control group. All patients received 1000 mg Calcium and 800 IU Vitamin D. CT scans were repeated every fourth week and functional outcome was assessed using a pain Visual Analogue Scale (VAS) and a Timed Up and Go (TUG) test. In all 21 patients treated with PTH 1-84 pelvic fractures were healed at a mean of 7.8 weeks, whereas in patients with no PTH treatment fractures had healed after 12.6 weeks ($p < 0.001$). The healing rates at week were 100% in the PTH 1-84 group versus 9.1% in the control group ($p < 0.001$). Both the VAS and TUG improved statistically significant ($p < 0.001$) compared to control. The authors concluded that PTH 1-84 accelerates fracture healing in pelvic fractures and improves functional outcome in elderly patients with osteoporosis.

NEW UTILITY OF DXA SCANS?

CHANGES ON HIP DXA SCANS MAY PREDICT ATYPICAL FRACTURES. ABSTRACT # 1138, BY YANG ET AL.

This study assessed whether DXA hip images used to measure and monitor BMD can be used to depict changes on the lateral cortex of the proximal femur in the patients on bisphosphonate before atypical subtrochanteric fracture occurs. The authors reviewed the medical records of 47 women who sustained atypical subtrochanteric fractures and their latest DXA hip images taken before the fracture. Thirty-three ipsilateral DXA hip images were available. Mean time of bisphosphonate administration was 5.9 years. Among 33 ipsilateral DXA images, diffuse lateral cortical thickening was found in 10 cases and positive focal changes in the lateral cortices were identified in 20 cases. Positive focal changes were external periosteal callus (6 cases), internal medullary callus (11 cases) and combined external-internal lesions (3 cases). Three images were negative, 2 of which didn't include the fracture level in DXA hip examination. Mean time gap between positive DXA and ipsilateral fracture was 14.3 months. Hip pain was present in 14 cases (42%). Mean T score of the total hip BMD was -1.2. The authors concluded that vigilance for the above mentioned four lateral cortical changes during serial DXA monitoring could help identifying the cortical stress lesions in asymptomatic long-term bisphosphonate users to prevent progression to complete subtrochanteric fracture.



HIGHLIGHTS FROM THE ASBMR 2011 ANNUAL MEETING

NEWLY IDENTIFIED HIGH RISK POPULATION FOR MAJOR OSTEOPOROTIC FRACTURES? HEART FAILURE AND MAJOR OSTEOPOROTIC FRACTURES. ABSTRACT # 1031, BY MAJUMDAR ET AL.

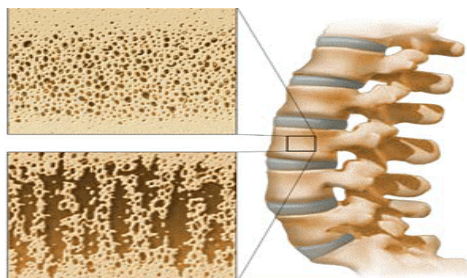
Majumdar et al assessed the relationship between heart function and bone health in a large population-based cohort study in Manitoba. They reviewed clinical registry of all adults age 50 years and older who underwent initial BMD testing from 1998-2007 with provincial databases and followed them until 2009, where they identified heart failure during the 2-years before BMD test and major non-traumatic osteoporotic fractures (i.e., vertebrae, distal radius, humerus, hip) diagnosed after BMD test. The cohort consisted of 45,509 adults of whom 1,841 (4%) had diagnosed heart failure. Subjects with heart failure were significantly ($p < 0.001$) older (mean 74 vs 66 years), more likely to be men (17% vs 7%), had more previous major osteoporotic fractures (21% vs 13%) and had lower total hip BMD than those without heart failure (T-score -1.3 ± 1.3 vs -0.9 ± 1.2 , $p < 0.001$). There were 2,703 incident fractures over a median 5-years observation. Overall, 10% of heart failure subjects had incident major fractures compared with 5% of those without (Hazard Ratio 1.64, 95%CI 1.45-1.86). Adjustment for osteoporosis risk factors, comorbidities, and medications attenuated but did not eliminate this association (HR 1.33, 95%CI 1.11-1.60) as did further adjustment for total hip BMD (HR 1.28, 95%CI 1.06-1.53). The authors concluded that heart failure was associated with an almost 30% increase in major osteoporotic fractures, independent of traditional clinical risk factors and BMD. Subjects with heart failure represent an easily identified high-risk population that would benefit from increased screening and treatment for osteoporosis.

NEW MODALITY OF ADMINISTRATION OF RECOMBINANT SALMON CALCITONIN? ORALLY ADMINISTERED RECOMBINANT SALMON CALCITONIN ABSTRACT #1134, BY BINKLEY ET AL

In this Phase 3, multinational, three-armed, double-blind, double-dummy study, 565 women (mean age 66.5 years) were randomized 4:3:2 to receive daily 200 μg oral (recombinant salmon calcitonin) rsCT tablets plus nasal placebo, oral placebo and 200 IU commercially available synthetic nasal salmon calcitonin (nasal ssCT), or placebo-placebo for 48 weeks. All doses were administered at bedtime. Calcium and vitamin D (1000mg/800IU) were provided to subjects for daily use. The mean lumbar spine T-score was -2.84. Although powered to show non-inferiority, oral rsCT was superior to nasal ssCT in increasing BMD (delta 0.77% [95% CI: 0.09, 1.45], $p = 0.026$). Consistent with the change in BMD, fasting Crosslaps decreased by 29.9%, 11.4% and 11.8% in the oral, nasal, and placebo arms (oral rsCT vs. nasal ssCT: $p < 0.001$). Tolerability was similar among the groups; the most common adverse events (AEs) in each group were GI. Few fractures occurred. The authors concluded that oral rsCT has potential to provide an additional oral treatment option for postmenopausal women with osteoporosis.

NEW MARKER FOR HIP FRACTURE RISK? OPG/RANKL/RANK LEVELS AND HIP FRACTURE. ABSTRACT # 1020, BY LACROIX ET AL.

The osteoprotegerin OPG/RANKL/RANK System is central to the coupling of osteoclasts and osteoblasts in bone biology. LaCroix et al conducted a nested case-control study within the Women's Health Initiative observational study. 400 incident hip fracture cases were randomly selected and individually matched to randomly selected controls that reported no postmenopausal fractures at baseline and were free of hip fracture during follow-up. Case-control pairs were Caucasian and matched on age (± 1 yr), enrollment date (± 365 days) and current hormone therapy use at baseline (exact). OPG and soluble RANKL (sRANKL) were measured by ELISA. No association was observed between sRANKL and hip fracture (p -trend= 0.25) or the ratio of OPG/sRANKL (p -trend=0.27). OPG levels in the highest quartile were associated with a two-fold increased risk of hip fracture. These results are consistent with a recent study showing an association of higher OPG levels (but not RANKL or OPG/RANKL levels) with height loss in men and postmenopausal women not using hormone therapy.



IOF REVIEWS "HOT OFF THE PRESS"

BALLOON KYPHOPLASTY AND VERTEBROPLASTY IN THE MANAGEMENT OF VERTEBRAL COMPRESSION FRACTURES

Vertebral compression fractures (VCFs) are a common cause of back pain and disability. The standard treatment of painful VCFs has been conservative non-surgical management (NSM), consisting of bed rest, analgesics and bracing. Unfortunately, even the highest standard of NSM cannot prevent kyphotic deformity or permit the restoration of spinal alignment. Vertebroplasty (VP) and balloon kyphoplasty (BKP) are minimally invasive approaches for vertebral augmentation available for the management of symptomatic VCFs. Serious complications though rare, can be potentially devastating. The Fracture Working Group of the International Osteoporosis Foundation conducted a review of the prospective controlled studies in the medical literature on the efficacy and safety of VP and BKP compared to NSM of VCFs. Efficacy was measured by the potential to reduce back pain, to improve quality of life and physical function, increase vertebral body height and improve kyphotic angle. Safety was assessed from the reported surgical complications, symptomatic cement leakage to incidence of new vertebral fractures. They concluded that VP and BKP are generally safe procedures that provide quicker pain relief, mobility recovery and in some cases vertebral height restoration than conventional NSM, at least in the short term. Further prospective randomized studies are needed, to assess long-term benefits and safety of these procedures. *S. Boonen et al. Osteoporos Int 2011; 22:2915-2934.*

PATHOPHYSIOLOGY OF ATYPICAL FEMORAL FRACTURES AND OSTEONECROSIS OF THE JAW

In the last decade, atypical femoral fractures (AFFs) and osteonecrosis of the jaw (ONJ) have emerged as potential complications of long-term bisphosphonate therapy. These conditions are rare, but are associated with significant morbidity. The pathophysiology of both conditions is poorly defined, and the underlying mechanisms are likely to differ. At the present time, no cases have been reported in patients taking other anti-resorptive agents but ONJ has been reported in patients on Denosumab. J Compston had recently reviewed the potential mechanisms underlying these two conditions. Potential underlying mechanisms of AFFs include over-suppression of bone turnover resulting in adverse effects such as increased age-related microdamage and reduced bone toughness. Other possible mechanisms are the bisphosphonate induced greater homogeneity of mineralization that may allow microcracks to propagate more rapidly, changes in collagen maturity and cross-linking, and anti-angiogenic actions of bisphosphonates. A high prevalence of co-morbidities has been reported in some but not all studies of women with AFFs. On the other hand, a number of potential mechanisms have been implicated in the development of ONJ, including suppression of bone turnover, infection and inflammation, inhibition of angiogenesis and immunomodulatory effects. However, the relative contributions of these factors and the sequence in which they operate remain poorly defined. For details please refer to *J Compston. Osteoporos Int 2011; 22:2951-2961*

DENSITOMETRY CORNER

Osteoporosis is a skeletal disorder characterized by compromised bone strength predisposing to an increased risk of fracture. Bone strength reflects the integration of two main features: bone density and bone quality. This definition dates back to several years, yet there is still no test approved to be used as a measurement of bone quality in clinical practice. Although epidemiological data link BMD and strength or fracture risk, DXA images however is not actually a measure of strength. Hip structure analysis (HSA) method was introduced by T. Beck to extract geometric strength information from archived hip dual-energy x-ray absorptiometry (DXA) scans acquired in large research studies. HSA measures not only the BMD of the hip bone but also structural geometry of cross-sections traversing the proximal femur at specific locations. These analysis regions are the narrow Neck (NN), the inter-trochanter (IT) and the femur shaft (FS). Two geometric measurements will then be extracted for each region. These include the Bone Tissue Surface (bCSA) of the cross-section and the Cross-Sectional Moment of Inertia (CSMI). Under physiological conditions and in most common traumas, stresses generated by loading forces mainly combine axial compression and bending. In axial compression, forces parallel to the long axis are uniformly distributed over the bCSA of the cross-section, whereas in bending stress, resistance of bone surface varies as the square of the distance from the neutral axis. Thus bone near the outer surface contributes much more than bone near the marrow cavity. Bending stress in a cross-section is calculated by its CSMI. For comparisons between individuals or evaluations of treatment a third indicator the section modulus can be calculated. Because the maximum stress in the cross-section is always at the point farthest from the center of mass (dmax); the section modulus is computed as CSMI divided by dmax. Because it describes maximum bending stress, the section modulus is an index of bending strength. HSA estimated from DXA scans has however several limitations. DXA scanners were designed for measuring BMD, but they were not designed to measure geometry and using data from multicenter clinical trials, HSA precision is approximately 1.5 to 2 times worse than conventional BMD on the same scans. Second in importance as a limitation of HSA is that scan images are often noisy and blurred so that edge margins can be difficult to locate precisely. Image quality problems tend to be exacerbated with the fastest scan modes and in heavier patients.

Because the DXA image is two-dimensional, HSA can evaluate CSMI and section modulus only in the image plane. Many bone cross-sections are not axially symmetric, so these properties vary with rotation of the bone. Improvements in DXA scanning software and perhaps hardware are feasible and should lead to a straightforward bone strength assessment in the clinical setting. *Beck T, Current Osteoporosis Reports 2007, 5:49-55*

NOT TO BE MISSED

OSTEOS 3RD ANNUAL MEETING: FROM VITAMIN D TO OSTEOPOROSIS & OTHER HEALTH OUTCOME

SPEAKERS		TOPICS
Rafic Baddoura MD, MPH Roger Bouillon, MD, PhD Etienne Cavalier, Pharm D Rose T. Daher, PhD, DABCC, FACB Bess Dawson-Hughes, MD Ghada El-Hajj Fuleihan, MD, MPH	Serge Livio Ferrari, MD Michael Holick, MD, PhD Roger Karam, MD David L Kendler, MD, FRCPC Michael R McClung, MD Leon Schurgers, BC, PhD	<i>Updates in osteoporosis treatment</i> <i>IOF Audit for the Middle East & Africa</i> <i>Vitamin D</i> <i>FRAX</i> FRAX applications, limitations & new technologies <i>Bone micro architecture and bone strength</i> <i>Vitamin K2</i> role in bone metabolism: the missing link

THE ISCD BODY COMPOSITION COURSE ON DECEMBER 1ST

The course is directed toward clinicians, technologists, researchers, scientists and health care providers who wish to learn skills and techniques of DXA body composition analyses to implement in their practice. Guest faculty members are David Kendler, MD, FRCPC & John Shepherd, PhD, CCD, CDT.

OSTEOPOROSIS ACADEMY COURSE FEB 3-4 AT GEFINOR ROTANA- SIX LECTURES AND 4 HANDS ON WORKSHOPS

The Calcium Metabolism and Osteoporosis Program at the American University of Beirut is organizing the launch of the ISCD Osteoporosis Academy, a practical course to teach physicians how to identify and manage patients with Osteoporosis. The course is designed to supply basic scientific information through didactic lectures that will cover basic scientific information on the importance of the disease and basic principles of management, and practice using information gained in small workshops.

LEARNING OBJECTIVES

1. Describe the epidemiology of osteoporosis and the importance of therapy
2. Explain basic bone biology
3. Describe the clinical utility of DXA and VFA
4. Identify common pitfalls in DXA assessment
5. Assess fracture risk from BMD and clinical risk factors
6. Fracture risk assessment including the use of FRAX and assumptions-limitations
7. Identify who should be treated, including use of NOF and other relevant local guidelines
8. List common secondary causes of osteoporosis, including malignant bone disease
9. Describe non-pharmacologic management of osteoporosis
10. List medication choices including mechanism of action and safety profile

Mark Your Calendar

Date	Event	Location
Feb 3-4, 2012	ISCD Osteoporosis Academy Course	Beirut –Gefinor Rotana , Lebanon
Mar 21-24, 2012	European Congress on Osteoporosis and Osteoarthritis IOF ECCECO 12	Palais des Congrès de Bordeaux - France
Mar 23-24, 2012	2 nd IOF-ESCEO Pre-clinical Symposium	Palais des Congrès de Bordeaux – France
May 17-19, 2012	8 th Symposium of Nutritional Aspects of Osteoporosis	Palace Hotel, Lausanne , Switzerland
May 19-23, 2012	39 th European Symposium on Calcified Tissues	Stockholm, Sweden
Oct 12-15, 2012	ASBMR 2012 Annual Meeting	Minneapolis, Minnesota, USA

