

## Conclusiones

La osteoporosis es una enfermedad caracterizada por una pérdida de balance entre la producción (que está reducida) y la resorción ósea (que está aumentada).

Mediante el uso de medicamentos como los bifosfonatos puede lograrse una reducción significativa de la resorción ósea y con medicamentos como la teriparatida, entre otros, puede lograrse un incremento de la formación, lo que conduce a incremento en la DMO y reducción significativa en el riesgo de fracturas vertebrales y no vertebrales.

## Referencias

1. United Nations Demographic Year Book. Special Issue Population aging and the situation of elderly persons. New York 1993.
2. Kanis JA, Melton LJ 3rd, Christiansen C, et al. The diagnosis of osteoporosis. *J Bone Miner Res.* 1994;9(8):1137-41.
3. Kanis JA, Johnell O, Oden A, Johansson H, McCloskey E. FRAX and the assessment of fracture probability in men and women from the UK. *Osteoporos Int.* 2008;19:385-97.
4. Kanis JA, Johnell O. The burden of osteoporosis. *J Endocrinol Invest.* 1999;22(8):583-8.
5. Asociación Colombiana de Osteología y Metabolismo Mineral (ACOMM). Conferencia de Consenso sobre diagnóstico y manejo de la osteoporosis. *Rev. Colomb. Osteol. Metab. Miner.* 2003. 2: 5-42.
6. Melton LJ III. Epidemiology of fractures. Chapter 10. En: Riggs BL, Melton LJ III eds. *Osteoporosis: Etiology, Diagnosis and Management. Second Edition.* Philadelphia: Lippincott Reven Publishers 1995b.
7. Looker AC, Johnston CC Jr, Wahner HW, Dunn WL, et al. Prevalence of low femoral bone density in older U.S. women from NHANES III. *J Bone Miner Res.* 1995;10(5):796-802.
8. Cummings SR, Melton LJ. Epidemiology and outcomes of osteoporotic fractures. *Lancet.* 2002;359(9319):1761-7.
9. Johnell O, Kanis JA. An estimate of the worldwide prevalence, mortality and disability associated with hip fracture. *Osteoporos Int.* 2004;15(11):897-902.
10. Carmona F. Osteoporosis en Santafé de Bogotá, Instituto Nacional de Salud de Colombia, 1999.
11. Ching Ponton KB, Paba García M, Ibañez de Rosa B, Del Valle Meza R, Benavidez Burbano A, Iglesias Rodríguez A, et al. Factores de riesgo para osteoporosis y osteopenia en 707 mujeres seleccionadas en Bogotá. *Rev. Esp. Enferm. Metab. Oseas* 2001;10 (3): 86-89.
12. Cure CA, Cure P, Padilla L, Peñaranda JC. Frecuencia de fracturas de acuerdo al sitio y su relación con la edad en mujeres postmenopáusicas. *Rev. Colomb. Osteol. Metab. Miner.* 2004;3(1): 27-31.
13. Alvarez RO, Ochoa FL, Sánchez F, Molina J, Molina JF, Castañeda A et al. Factores de riesgo relacionados con la osteoporosis en una población latinoamericana. *Rev. Colomb. Menopausia* 2003;9(4):307-316.

14. Ardila E, Guzmán M, Cristancho P, Mendez L, Puig A, Medina F, et al. Características de las fracturas de cadera: a propósito del análisis de historias clínicas en tres hospitales universitarios colombianos. *Rev. Colomb. Osteol. Metab. Miner.* 2004; 3(1): 21-26.
15. Clarck P. Epidemiología de las fracturas por osteoporosis en Latinoamérica. En: Osteoporosis en Iberoamérica 2da edición. Ardila E, Mautalen C, Jimenez C. (eds), pp. 19-29. Editorial Manual Moderno Bogotá 2011.
16. Kanis J. A. Osteoporosis. Blackwell Science Ltd. Oxford, Primera edición española. 1996
17. Barze U. S. Osteoporosis: Tomando un aire fresco. *Postgraduate Medicine* 1996; vol 1, No 1.
18. Marcus R. Clinical review 76: The nature of osteoporosis. *J Clin Endocrinol Metab.* 1996;81(1):1-5.
19. Nijweide PJ, Burger EH, Feyen JH. Cells of bone: proliferation, differentiation, and hormonal regulation. *Physiol Rev.* 1986;66(4):855-86.
20. Manolagas SC, Jilka RL. Bone marrow, cytokines, and bone remodeling. Emerging insights into the pathophysiology of osteoporosis. *N Engl J Med.* 1995;332(5):305-11.
21. Suda T, Takahashi N, Martin TJ. Modulation of osteoclast differentiation. *Endocr Rev.* 1992;13(1):66-80
22. Cañas CA, Iglesias A. Fisiopatología de la Osteoporosis. En Osteoporosis en Iberoamérica. Versaluis Eds. 2000; 23-34.
23. Degroot L. Endocrinology. WB Saunders Company. 3ª Ed. 1995: 917-1277.
24. Fleish H Bone and Mineral metabolism. Parthenón Publishing Group (eds). 1995: 11-30.
25. Blair JM, Zheng Y, Dunstan CR. RANK ligand. *Int J Biochem Cell Biol.* 2007;39(6):1077-81.
26. Kanis JA, Burlet N, Cooper C, et al; European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO). European guidance for the diagnosis and management of osteoporosis in postmenopausal women. *Osteoporos Int.* 2008;19:399-428.
27. Gehlbach SH, Bigelow C, Heimisdottir M, May S, et al. Recognition of vertebral fracture in a clinical setting. *Osteoporos Int.* 2000;11(7):577-82.
28. Hermoso de Mendoza MT. Classification of osteoporosis. Risk factors. Clinical manifestations and differential diagnosis]. *An Sist Sanit Navar.* 2003;26(Suppl 3):29-52.
29. Kanis JA, Johnell O, Oden A, Johansson H, McCloskey E. FRAX and the assessment of fracture probability in men and women from the UK. *Osteoporos Int.* 2008;19:385-97.
30. Kanis JA, Oden A, Johnell O, et al. The use of clinical risk factors enhances the performance of BMD in the prediction of hip and osteoporotic fractures in men and women. *Osteoporos Int.* 2007;18(8):1033-46.
31. Ardila E, Chalem M, Rueda PN, Pérez J, por la Asociación Colombiana de Osteología y Metabolismo Mineral (ACOMM): Conferencia de Consenso: Diagnóstico y manejo de la Osteoporosis, 2001.
32. Allende-Vigo MZ. The use of biochemical markers of bone turnover in osteoporosis. *P R Health Sci J.* 2007;26(2):91-5
33. Arriagada M (Coordinadora): Sociedad Chilena de Reumatología y Sociedad Chilena de Osteología y Metabolismo Mineral: Guías de Diagnóstico, Prevención y Tratamiento de la Osteoporosis, 2006, pp 1-75.
34. Brown JP, Josse RG; Scientific Advisory Council of the Osteoporosis Society of Canada. 2002 clinical practice guidelines for the diagnosis and management of osteoporosis in Canada. *CMAJ.* 2002;167(10 Suppl):S1-34.

35. Compston J, Cooper A, Cooper C, et al; National Osteoporosis Guideline Group (NOGG). Guidelines for the diagnosis and management of osteoporosis in postmenopausal women and men from the age of 50 years in the UK. *Maturitas*. 2009;62(2):105-8.
36. Consensus development conference: diagnosis, prophylaxis, and treatment of osteoporosis. *Am J Med*. 1993;94(6):646-50.
37. Delmas PD, Eastell R, Garnero P, et al; Committee of Scientific Advisors of the International Osteoporosis Foundation. The use of biochemical markers of bone turnover in osteoporosis. Committee of Scientific Advisors of the International Osteoporosis Foundation. *Osteoporos Int*. 2000;11 Suppl 6:S2-17.
38. Garnero P. Markers of bone turnover for the prediction of fracture risk. *Osteoporos Int*. 2000;11 Suppl 6:S55-65
39. Garnero P, Delmas PD. Biochemical markers of bone turnover. Applications for osteoporosis. *Endocrinol Metab Clin North Am*. 1998;27(2):303-23.
40. Harper KD, Weber TJ. Secondary osteoporosis. Diagnostic considerations. *Endocrinol Metab Clin North Am*. 1998;27(2):325-48.
41. American Association of Clinical Endocrinologists Osteoporosis Task Force. American Association of Clinical Endocrinologists 2001 Medical Guidelines for Clinical Practice for the Prevention and Management of Postmenopausal Osteoporosis. *Endocr Pract*. 2001;7(4):293-312.
42. Hofbauer LC, Hamann C, Ebeling PR. Approach to the patient with secondary osteoporosis. *Eur J Endocrinol*. 2010;162(6):1009-20.
43. Institute For Clinical Systems Improvement (ICSI): Diagnosis and Treatment of Osteoporosis 4th Edition, 2005, citado por: Mauck KF, Clarke BL. Diagnosis, screening, prevention, and treatment of osteoporosis. *Mayo Clin Proc*. 2006 May;81(5):662-72.
44. Institute For Clinical Systems Improvement (ICSI): Diagnosis and Treatment of Osteoporosis Sixth Edition September 2008, accesible en: [http://www.icsi.org/osteoporosis/diagnosis\\_and\\_treatment\\_of\\_osteoporosis\\_3.html](http://www.icsi.org/osteoporosis/diagnosis_and_treatment_of_osteoporosis_3.html) (Último acceso 28/02/2011).
45. Kanis JA. Diagnosis of osteoporosis and assessment of fracture risk. *Lancet*. 2002;359(9321):1929-36.
46. Kanis JA, Burlet N, Cooper C, et al; European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO). European guidance for the diagnosis and management of osteoporosis in postmenopausal women. *Osteoporos Int*. 2008;19:399-428.
47. Kanis JA, on behalf of the World Health Organization Scientific Group: Assessment of osteoporosis at the primary health-care level. Technical Report. UK: WHO Collaborating Centre, University of Sheffield; 2008.
48. Teng K. Premenopausal osteoporosis, an overlooked consequence of anorexia nervosa. *Cleve Clin J Med*. 2011;78(1):50-8.
49. Khosla S. Update in male osteoporosis. *J Clin Endocrinol Metab*. 2010;95(1):3-10.
50. Lafita J, Pineda J, Fuentes C, Martínez JP. [Secondary osteoporosis]. *An Sist Sanit Navar*. 2003;26 Suppl 3:53-62.
51. Lindsay R. Clinical utility of biochemical markers. *Osteoporos Int*. 1999;9 Suppl 2:S29-32
52. Looker AC, Bauer DC, Chesnut CH 3rd, et al. Clinical use of biochemical markers of bone remodeling: current status and future directions. *Osteoporos Int*. 2000;11(6):467-80.
53. Mauck KF, Clarke BL. Diagnosis, screening, prevention, and treatment of osteoporosis. *Mayo Clin Proc*. 2006;81(5):662-72.
54. National Osteoporosis Foundation: Clinician's Guide to Prevention and Treatment of Osteoporosis. Washington, DC: National Osteoporosis Foundation; 2010:<http://www.>

- nof.org/sites/default/files/pdfs/NOF\_ClinicianGuide2009\_v7.pdf (Último acceso 28/02/2011).
55. O'Neill S, MacLennan A, Bass S, et al; Osteoporosis Australia Medical Scientific Committee. Guidelines for the management of postmenopausal osteoporosis for GPs. *Aust Fam Physician*. 2004;33(11):910-9.
  56. Parfitt AM. High bone turnover is intrinsically harmful: two paths to a similar conclusion. The Parfitt view. *J Bone Miner Res*. 2002;17(8):1558-9.
  57. Poole KE, Compston JE. Osteoporosis and its management. *BMJ*. 2006;333(7581):1251-6.
  58. Royal College of Physicians, National Osteoporosis Guideline Group on behalf of the Bone Research Society, British Geriatrics Society, British Orthopaedic Association, British Society of Rheumatology, National Osteoporosis Society, Osteoporosis 2000, Osteoporosis Dorset, Primary Care Rheumatology Society, Society for Endocrinology. Osteoporosis: Clinical guideline for prevention and treatment, Executive Summary. University of Sheffield Press; 2008.
  59. Sambrook P, Cooper C. Osteoporosis. *Lancet*. 2006;367(9527):2010-8.
  60. Serota AC, Lane JL: Osteoporosis Secondary, Secondary, <http://emedicine.medscape.com/article/311449-print>, Updated: Jun 2, 2010 (último acceso 28/02/2011).
  61. Schurman L, Bagur A, Claus-Hermsberg H, Messina OD, Negri A, Sánchez A. Guías para el diagnóstico, prevención y tratamiento de la osteoporosis 2007. *Actualiz Osteol* 2007; 3(3):117-136.
  62. Scottish Intercollegiate Guidelines Network. Management of osteoporosis: a national clinical guideline. June 2003. <http://www.sign.ac.uk/> (último acceso 28 febrero 2011).
  63. Stein E, Shane E. Secondary osteoporosis. *Endocrinol Metab Clin North Am*. 2003;32(1):115-34.
  64. Tannenbaum C, Clark J, Schwartzman K, et al. Yield of laboratory testing to identify secondary contributors to osteoporosis in otherwise healthy women. *J Clin Endocrinol Metab*. 2002;87(10):4431-7.
  65. Templeton K. Secondary osteoporosis. *J Am Acad Orthop Surg*. 2005;13(7):475-86.
  66. Management of osteoporosis in postmenopausal women: 2010 position statement of The North American Menopause Society. *Menopause*. 2010;17(1):25-54.
  67. Watts NB, Bilezikian JP, Camacho PM, et al; AACE Osteoporosis Task Force. American Association of Clinical Endocrinologists Medical Guidelines for Clinical Practice for the diagnosis and treatment of postmenopausal osteoporosis. *Endocr Pract*. 2010c;16 Suppl 3:1-37.
  68. WHO Scientific Group on the Prevention and Management of Osteoporosis. Prevention and management of osteoporosis: report of a WHO scientific group. (WHO technical report series; 921). Geneva, Switzerland: WHO; 2000 y 2003.
  69. NIH Consensus Development Panel on Osteoporosis Prevention, Diagnosis, and Therapy. Osteoporosis prevention, diagnosis, and therapy. *JAMA*. 2001;285(6):785-95.
  70. Blake GM, Fogelman I. Technical principles of dual energy x-ray absorptiometry. *Semin Nucl Med*. 1997;27(3):210-28.
  71. Zancheta Osteoporosis, fisiopatología, diagnóstico, prevención y tratamiento 2001 Editorial Medica panamericana.
  72. Carter DR, Bouxsein ML, Marcus R. New approaches for interpreting projected bone densitometry data. *J Bone Miner Res*. 1992;7(2):137-45.
  73. Kanis JA, Melton LJ 3rd, Christiansen C, et al. The diagnosis of osteoporosis. *J Bone Miner Res*. 1994;9(8):1137-41.

74. Bone Desitometry course ISCD 2010:74-77.
75. Marshall D, Johnell O, Wedel H. Meta-analysis of how well measures of bone mineral density predict occurrence of osteoporotic fractures. *BMJ*. 1996;312(7041):1254-9.
76. Kanis JA, Black D, Cooper C, et al; International Osteoporosis Foundation; National Osteoporosis Foundation. A new approach to the development of assessment guidelines for osteoporosis. *Osteoporos Int*. 2002;13(7):527-36.
77. Del Pino J, Corral L, Montilla C et al. Metodos complementarios en el diagnostico y seguimiento de la osteoporosis. *Rev Clin Esp*. 2009;209:Supl 1:23-8.
78. Guia de practica clínica osteoporosis GEIOS Grupo de Estudio e Investigación de la Osteoporosis Sociedad Española.
79. Genant HK, Wu CY, van Kuijk C, Nevitt MC. Vertebral fracture assessment using a semi-quantitative technique. *J Bone Miner Res*. 1993;8(9):1137-48.
80. F Cons Molina. Métodos de Evaluación de la Masa Ósea para el Diagnóstico de Osteoporosis. *Rev Metab Óseo Min*. 2004; 2(1):137-146.
81. Boutry N, Cortet B, Dubois G, et al. Trabecular Bone Structure of the Calcaneus: Preliminary in vivo MR Imaging Assessment in Men with Osteoporosis. *Radiology* 2003; 10.1148/radiol.2273020420).
82. D. Pereyra, Imagenología de la osteoporosis. *Rev. Sociedad Uruguaya de reumatología*. 1994;12
83. Singer A. Osteoporosis diagnosis and screening. *Clin Cornerstone*. 2006;8(1):9-18.
84. Qaseem A, Snow V, Shekelle P, et al; Clinical Efficacy Assessment Subcommittee of the American College of Physicians. Pharmacologic treatment of low bone density or osteoporosis to prevent fractures: a clinical practice guideline from the American College of Physicians. *Ann Intern Med*. 2008;149(6):404-15.
85. Cranney A, Guyatt G, Griffith L, et al; Osteoporosis Methodology Group and The Osteoporosis Research Advisory Group. Meta-analyses of therapies for postmenopausal osteoporosis. IX: Summary of meta-analyses of therapies for postmenopausal osteoporosis. *Endocr Rev*. 2002;23(4):570-8.
86. Nancollas GH, Tang R, Phipps RJ, et al. Novel insights into actions of bisphosphonates on bone: differences in interactions with hydroxyapatite. *Bone*. 2006;38(5):617-27.
87. Solomon DH, Rekedal L, Cadarette SM. Osteoporosis treatments and adverse events. *Curr Opin Rheumatol*. 2009;21(4):363-8.
88. Black DM, Delmas PD, Eastell R, et al; HORIZON Pivotal Fracture Trial. Once-yearly zoledronic acid for treatment of postmenopausal osteoporosis. *N Engl J Med*. 2007;356(18):1809-22.
89. Green J, Czanner G, Reeves G, et al. Oral bisphosphonates and risk of cancer of oesophagus, stomach, and colorectum: case-control analysis within a UK primary care cohort. *BMJ*. 2010;341:c4444
90. Cardwell CR, Abnet CC, Cantwell MM, Murray LJ. Exposure to oral bisphosphonates and risk of esophageal cancer. *JAMA*. 2010;304(6):657-63.
91. Canalis E, Giustina A, Bilezikian JP. Mechanisms of anabolic therapies for osteoporosis. *N Engl J Med*. 2007;357(9):905-16.
92. Hodsman AB, Bauer DC, Dempster DW, et al. Parathyroid hormone and teriparatide for the treatment of osteoporosis: a review of the evidence and suggested guidelines for its use. *Endocr Rev*. 2005;26(5):688-703.