



## CONSENSUS DOCUMENT

### Clinical practice guidelines for evaluation and treatment of osteoporosis associated to endocrine and nutritional conditions<sup>☆</sup>

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Received 5 January 2012; accepted 10 January 2012

#### KEYWORDS

Endocrine diseases;  
Nutritional diseases;  
Osteoporosis;  
Fractures;  
Diagnosis;  
Treatment

#### Abstract

**Objective:** To provide practical recommendations for evaluation and treatment of osteoporosis associated to endocrine diseases and nutritional conditions.

**Participants:** Members of the Bone Metabolism Working Group of the Spanish Society of Endocrinology, a methodologist, and a documentalist.

**Methods:** Recommendations were formulated according to the GRADE system (Grading of Recommendations, Assessment, Development, and Evaluation) to describe both the strength

<sup>☆</sup> Please cite this article as: Reyes García R, et al. Guías de práctica clínica para la evaluación y tratamiento de la osteoporosis asociada a enfermedades endocrinas y nutricionales. Endocrinol Nutr. 2012;59:174–96.

**Abbreviations:** DXA, Dual X ray densitometry; DM1, type 1 diabetes mellitus; BMD, bone mineral density; BMI, body mass index; VF, vertebral fracture; DM2, type 2 diabetes mellitus; PHTP, primary hyperparathyroidism; PTH, parathyroid hormone; RR, relative risk; GHD, GH density; CD, celiac disease; IID, inflammatory intestinal disease; AN, anorexia nervosa; HPN, home parenteral nutrition.

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of recommendations and the quality of evidence. A systematic search was made in MEDLINE (Pubmed), using the following terms associated to the name of each condition: AND "osteoporosis", "fractures", "bone mineral density", and "treatment". Papers in English with publication date before 18 October 2011 were included. Current evidence for each disease was reviewed by two group members, and doubts, related to the review process or development of recommendations were resolved by the methodologist. Finally, recommendations were discussed in a meeting of the Working Group.

**Conclusions:** The document provides evidence-based practical recommendations for evaluation and management of endocrine and nutritional diseases associated to low bone mass or an increased risk of fracture. For each disease, the associated risk of low bone mass and fragility fractures is given, recommendations for bone mass assessment are provided, and treatment options that have shown to be effective for increasing bone mass and/or to decreasing fragility fractures are listed.

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## PALABRAS CLAVE

Patologías endocrinas;  
Patologías nutricionales;  
Osteoporosis;  
Fracturas;  
Diagnóstico;  
Tratamiento

## Guías de práctica clínica para la evaluación y tratamiento de la osteoporosis asociada a enfermedades endocrinas y nutricionales

### Resumen

**Objetivo:** Proporcionar unas recomendaciones prácticas para la evaluación y tratamiento de la osteoporosis asociada a diferentes enfermedades endocrinas y alteraciones nutricionales.

**Participantes:** Miembros del Grupo de Metabolismo Mineral de la Sociedad Española de Endocrinología y Nutrición, un metodólogo y un documentalista.

**Métodos:** Las recomendaciones se formularon de acuerdo al sistema *Grading of Recommendations, Assessment, Development, and Evaluation* (GRADE) para establecer tanto la fuerza de las recomendaciones como el grado de evidencia. Se realizó una búsqueda sistemática en Medline de la evidencia disponible para cada patología usando las siguientes palabras clave asociadas al nombre de cada patología: AND *osteoporosis, fractures, bone mineral density, bone markers y treatment*. Se revisaron artículos escritos en inglés con fecha de inclusión hasta 18 de octubre de 2011, y cada tema fue revisado por dos personas del Grupo. Un metodólogo resolvió las diferencias que surgieron durante el proceso de revisión de bibliografía y formulación de recomendaciones. Tras la formulación de las recomendaciones estas se discutieron en una reunión conjunta del Grupo de Trabajo.

**Conclusiones:** El documento establece unas recomendaciones prácticas basadas en la evidencia acerca de la evaluación y tratamiento de la osteoporosis en las enfermedades endocrinas y nutricionales que asocian baja masa ósea o aumento del riesgo de fractura. Para cada patología, se señala el riesgo de osteoporosis y fracturas asociado, se formulan recomendaciones en cuanto a la evaluación de masa ósea y se enumeran las opciones terapéuticas que han demostrado eficacia en aumentar la densidad mineral ósea y/o reducir el riesgo de fractura.

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## Introduction

Many diseases in the field of endocrinology and nutrition are associated with osteoporosis and an increased risk of fracture. However, for many of these conditions there are no specific recommendations available for bone mass evaluation and management.

In this setting, the Working Group on Mineral Metabolism of the Spanish Society of Endocrinology and Nutrition (SEEN) decided to prepare practical recommendations for the evaluation and treatment of osteoporosis associated with different endocrine diseases and nutritional disorders. The objective was to establish evidence-based recommendations with regard to the risk of low bone mass and fracture associated with each condition, the diagnostic tests required for their assessment, and treatments that have been shown to increase bone mass and/or decrease the risk of fracture. When poor or no evidence was available, members of

the Working Group made recommendations based on their experience and understanding of these diseases.

## Development of evidence-based recommendations

Recommendations were made based on the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) system to establish the strength of the recommendations and the level of evidence.<sup>1</sup> This system gives a graphic description of the quality of the available evidence and the strength of the recommendations made based on that evidence. Thus, in terms of strength a distinction is made between strong recommendations, expressed as "We recommend" at number 1, and weak recommendations, expressed as "We suggest" at number 2. The quality of evidence is expressed in symbols:  $\oplus$  indicates very

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