



# Il Ruolo della Vitamina D in Gastroenterologia

*Cona, 21 Maggio 2016*

*Prof. G. Zoli  
Università degli Studi di Bologna  
Unità Operativa di Medicina  
Interna  
Centro Malattie Infiammatorie  
Croniche dell'Intestino  
Ospedale SS. Annunziata  
di Cento ( FE )*



*Società  
Medico Chirurgica  
di Ferrara*

# Vitamin D in Gastroenterology

180

*Current Pharmaceutical Design*, 2016, 22, 180-188

## **Dietary Supplement Therapies for Inflammatory Bowel Disease: Crohn's Disease and Ulcerative Colitis**

Alyssa Parian<sup>1\*</sup> and Berkeley N. Limketkai<sup>2</sup>

Vitamin D is a fat-soluble hormone that includes ergocalciferol (D<sub>2</sub>) and cholecalciferol (D<sub>3</sub>). Sources of vitamin D in humans include diet, vitamin supplements, and endogenous synthesis through sunlight (ultraviolet B) exposure. Foods rich in vitamin D include fatty fish, cod liver oil, beef liver, egg yolks, and vitamin D-fortified milk.

# Vitamin D in Gastroenterology

180

*Current Pharmaceutical Design*, 2016, 22, 180-188

## **Dietary Supplement Therapies for Inflammatory Bowel Disease: Crohn's Disease and Ulcerative Colitis**

Alyssa Parian<sup>1\*</sup> and Berkeley N. Limketkai<sup>2</sup>

Vitamin D has traditionally been associated with bone health, but more recently discovered to possess immunomodulatory properties. Some immunologic effects of vitamin D include impairment of lymphocyte proliferation, expansion of regulatory T cells, and modulation of inflammatory cytokine release [10-15]. Consequently, a deficiency in vitamin D has been associated with several autoimmune disease such as multiple sclerosis [16], rheumatoid arthritis [17], and systemic lupus erythematosus [18].

## Prevalence of Nutritional Deficiencies in IBD

	Crohn's disease (%)	Ulcerative colitis (%)
Weight loss	65–75	18–62
Hypoalbuminaemia	25–80	25–50
Anaemia	60–80	66
Iron	39	81
Vitamin B <sub>12</sub>	48	5
Folic acid	54	36
Calcium	13	NA
Magnesium	14–33	NA
Potassium	6–20	NA
Vitamin A	11	NA
Vitamin C	12	NA
Vitamin D	75	35
Vitamin K	10–25	NA
Zinc	10–50	NA
<b>Growth failure</b>	<b>15 - 30</b>	

Adapted from Driscoll and Rosenberg<sup>56</sup>.

NA, not available.

Yamamoto et al., *Aliment Pharmacol Ther* 2009

# Vitamin D in Gastroenterology

## Clinical Course of Bone Metabolism Disorders in Patients with Inflammatory Bowel Disease: A 5-Year Prospective Study

*Fernando Casals-Seoane, MD, PhD, María Chaparro, MD, PhD, José Maté, MD, PhD, and Javier P. Gisbert, MD, PhD*

Ulcerative colitis (UC) and Crohn's disease (CD) mainly affect the digestive tract. In addition, one-third of patients who present with inflammatory bowel disease (IBD) experience extra-intestinal manifestations of the disease.<sup>1-4</sup> One of the most common manifestations are bone metabolism disorders, with prevalence rates of osteoporosis and osteopenia in the range of 5% to 40% and 16% to 77%, respectively.<sup>2,5-8</sup>

*(Inflamm Bowel Dis 2016;0:1-8)*

# Vitamin D in Gastroenterology

Interest in the role of vitamin D in the pathogenesis of inflammatory bowel diseases (IBD; Crohn's disease (CD), ulcerative colitis (UC)) has increased exponentially over the past decade. A cursory search for publications on "Vitamin D AND IBD" on Pubmed reveals 144 publications (with 43 reviews) in the 5-year period between 2011 and 2015 compared with only 80 (with 23 reviews) in the 20 years between 1991 and 2010. Underlying this interest is the growing evidence of an influence of vitamin D beyond calcium absorption and bone health (1–5). Vitamin D through the binding of its active form 1,25-dihydroxy cholecalciferol to the nuclear vitamin D receptor (VDR) in the small intestine epithelium augments luminal absorption of calcium (4,6). Through a similar effect on VDR on the osteoblasts, vitamin D increases the expression of the receptor activator for nuclear factor  $\kappa$ B ligand (RANKL) that binds with RANK and converts pre-osteoclasts to osteoclasts, facilitating bone turnover and maintenance of circulating calcium and phosphorous homeostasis (6).

# Vitamin D in Gastroenterology

Although there are suggestions in animal studies, epidemiologic data, and small cohort studies that vitamin D may improve IBD [11, 15, 24-38], the evidence is still circumstantial. Larger and more robust randomized controlled trials are needed to determine whether vitamin D can indeed influence disease activity and to what degree. Moreover, although < 20 ng/mL vitamin D is considered “deficient” in adults, and levels between 20 and 30 ng/mL are considered “insufficient”, the optimal dose for immunomodulation is unclear. In any case, vitamin D deficiency occurs frequently in IBD patients due to increased sun avoidance while on thiopurines, small bowel inflammation causing relative malabsorption, ileal resection affecting bile salt resorption, and increased stool excretion

# Vitamin D in Gastroenterology

## Low Serum Vitamin D

### *A Surrogate Marker for Advanced Colon Adenoma?*

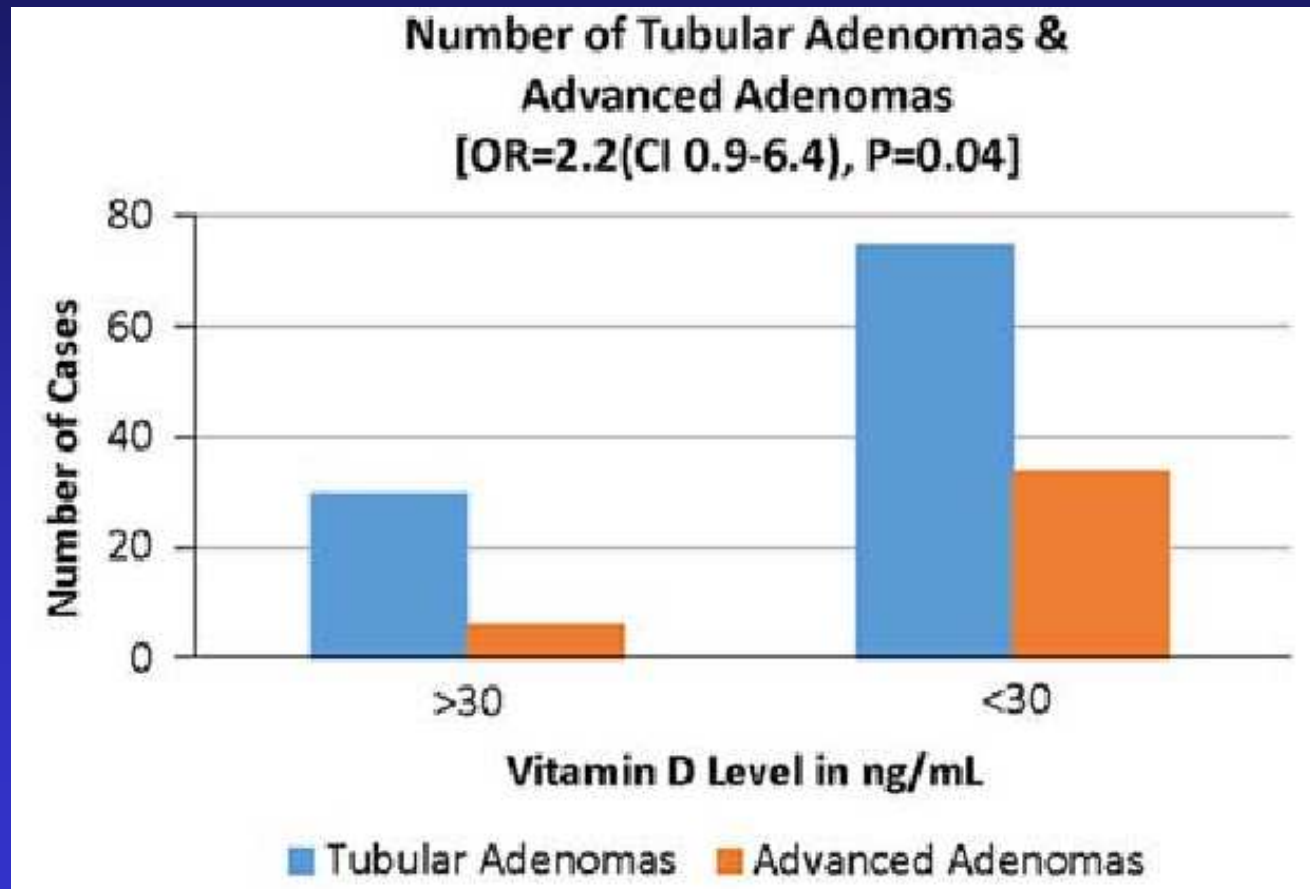
*Imad I. Ahmad, MBBS,\* Guru Trikudanathan, MBBS,†*

*Richard Feinn, MS, PhD,‡ Joseph C. Anderson, MD, FACG,§*

*Marie Nicholson, MS,|| Samantha Lowe, MS,|| and Joel B. Levine, MD, FACG¶*

*J Clin Gastroenterol 2016*

# Vitamin D in Gastroenterology



# Vitamin D in Gastroenterology

**Main Conclusions:** Most patients presenting in our Colon Cancer Prevention Program have low levels of serum 25-OH Vitamin D. Analysis of the results of both screening and surveillance colonoscopies demonstrated an inverse relation between serum 25-OH Vitamin D level and AAs.

*J Clin Gastroenterol 2016*

# Vitamin D in Gastroenterology

Curr Osteoporos Rep. 2016 Apr;14(2):43-8. doi: 10.1007/s11914-016-0304-5.

## **Bone and Celiac Disease.**

Zanchetta MB<sup>1,2</sup>, Longobardi V<sup>3,4</sup>, Bai JC<sup>5</sup>.

More than 50 % of untreated patients with celiac disease (CD) have bone loss detected by bone densitometry (dual-energy X-ray absorptiometry:DXA). Moreover, patients with CD are more likely to have osteoporosis and fragility fractures, especially of the distal radius. Although still controversial, we recommend **DXA screening** in all celiac disease patients, particularly in those with symptomatic CD at diagnosis and in those who present risk factors for fracture such as older age, menopausal status, previous fracture history, and familial hip fracture history. **Bone microarchitecture, especially the trabecular network, may be deteriorated, explaining the higher fracture risk in these patients.** Adequate calcium and vitamin D supplementation are also recommended to optimize bone recovery, especially during the first years of gluten free diet (GFD). If higher fracture risk persists after 1 or 2 years of GFD, specific osteoactive treatment may be necessary to improve bone health.

# Vitamin D in Gastroenterology

J Dig Dis. 2015 Nov;16(11):617-33. doi: 10.1111/1751-2980.12283.

**Vitamin D deficiency in patients with intestinal malabsorption syndromes--think in and outside the gut.**

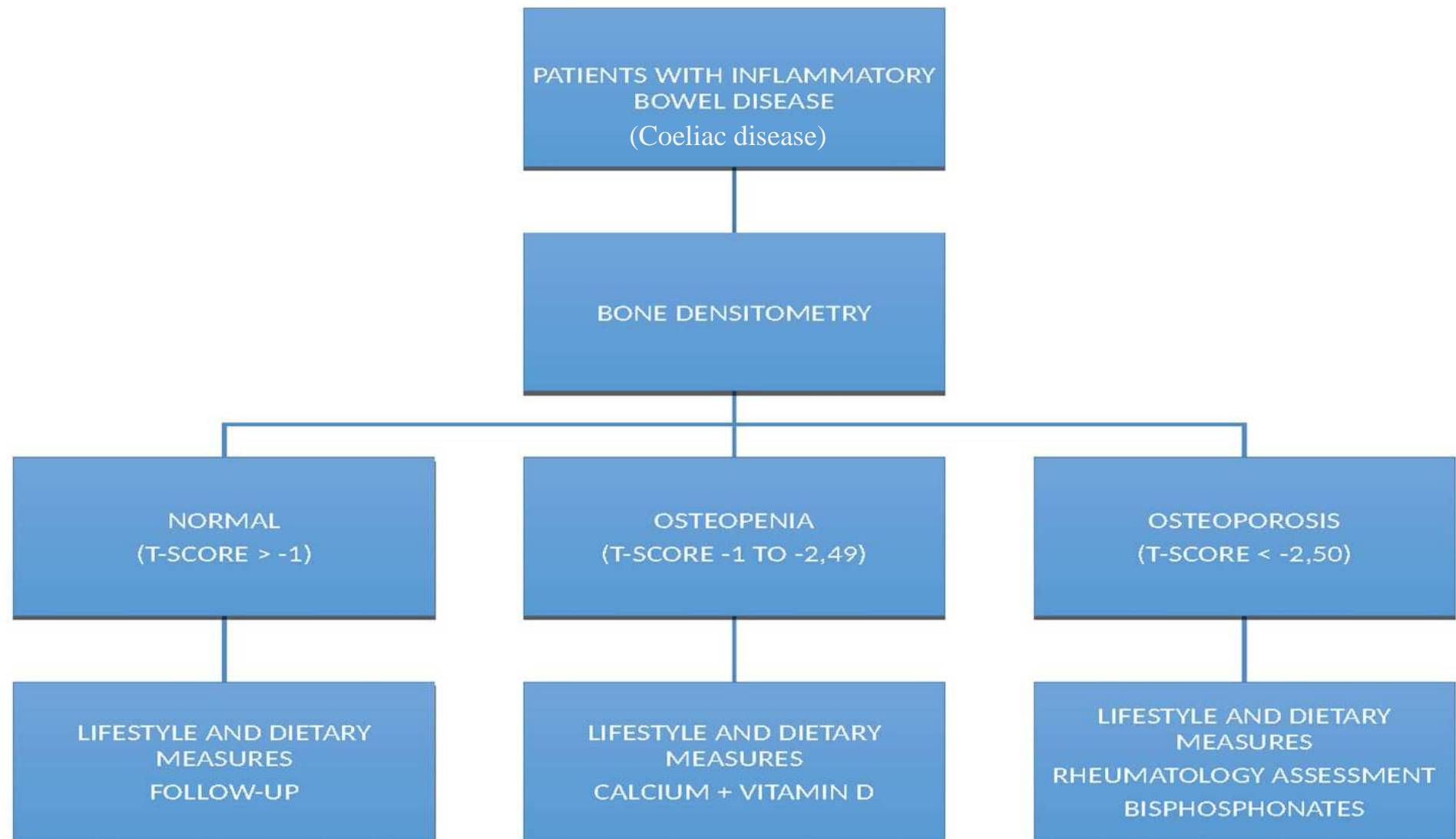
Margulies SL<sup>1</sup>, Kurian D<sup>1</sup>, Elliott MS<sup>2</sup>, Han Z<sup>2</sup>.

There is a **very high prevalence of vitamin D deficiency**, which is defined by a serum level of 25-hydroxyvitamin D [25(OH)D] of lower than 20 ng/mL, **in all populations of the world**. Unfortunately, the prevalence of vitamin D deficiency in patients with intestinal malabsorption syndromes, including cystic fibrosis (CF), celiac disease (CD), short bowel syndrome and inflammatory bowel disease (IBD), is higher than that in the general population, indicating the presence of disease-specific causative factors. In this review, we aimed to present clinical findings to highlight the roles of insufficient exposure to sunlight and inflammation in the development of vitamin D deficiency in patients with intestinal malabsorption syndromes. Furthermore, we aimed to present experimental evidence that supported **a role of vitamin D deficiency in the pathogenesis of IBD**. Finally, we reviewed clinical intervention strategies aiming to normalize vitamin D status in and even to improve the conditions of patients and to discuss certain issues that needed to be addressed in future research.

# Vitamin D in Gastroenterology

Inflamm Bowel Dis • Volume 0, Number 0, Month 2016

Course of Osteopenia and Osteoporosis in IBD



# Vitamin D in Gastroenterology

**Oggetto:** trasmissione *Pacchetto informativo RER su Vitamina D*.  
Si invia in allegato il Pacchetto Informativo della **Regione Emilia Romagna** “**Vitamina D nella pratica clinica**”, che riporta le indicazioni sull’uso appropriato di tale farmaco, sulla base delle più recenti evidenze scientifiche, e ne raccomanda l’utilizzo **solo in caso di “carezza”**, peraltro unica indicazione registrata per tale farmaco.

La vitamina D rappresenta una grossa criticità nella prescrizione farmaceutica, nel 2015 la spesa relativa nella provincia di Ferrara ha sfiorato i 2.000.000€, con un incremento rispetto all’anno 2014 del +24%, ed uno scostamento Vs la media Regionale del+82%.  
Come si evince dal grafico sotto riportato Ferrara è la Provincia della Regione con la maggiore prescrizione in termini di DDD/1.000 ab pes die nell’anno 2015.

# Vitamin D in Gastroenterology

Grazie per l'attenzione e buon Week End!





# Inflammatory Bowel Diseases (IBD)

IBD is a group of inflammatory conditions of the colon and small intestine.

The major types of IBD are Crohn's disease and ulcerative colitis

Symptoms: abdominal pain, vomiting, diarrhoea, rectal bleeding, severe internal cramps/muscle spasms, weight loss and associated diseases like arthritis.

Symptoms go through flare ups and periods of remission.

Bacterial imbalance is an identified issue with low number of *bifidobacteria* and *lactobacilli* and a possible positive relationship between *Mycobacterium avium paratuberculosis* (MAP) and Crohn's disease.

Potential nutritional treatments include liquid diets (Crohn's Disease), probiotics, anti-inflammatory botanicals and EFAs.