Vitamin D and Tanning

Martin A. Weinstock, MD, PhD
Dermatoepidemiology Unit, V A Medical Center
Depts of Dermatology and Community Health, Brown Univ
Providence, Rhode Island

Vitamin D

- Vitamin? No, it is a hormone.
- Essential for health
- Active form (1,25 dihydroxy-vitamin D) is tightly regulated
- Key precursor is 25-hydroxy-vitamin D

Requirements/Sources of Vitamin D

- Daily reference intake (DRI):
  - 200 IU per day if age<50
  - 400 IU/day if age 50-70
  - 600 IU/day if age>70
- Diet
  - Dairy products (esp. milk, some OJ)
  - Fish oils (sardines, salmon, mackerel)
  - Polar bear liver has a lot
- Dietary Supplements (400 IU)

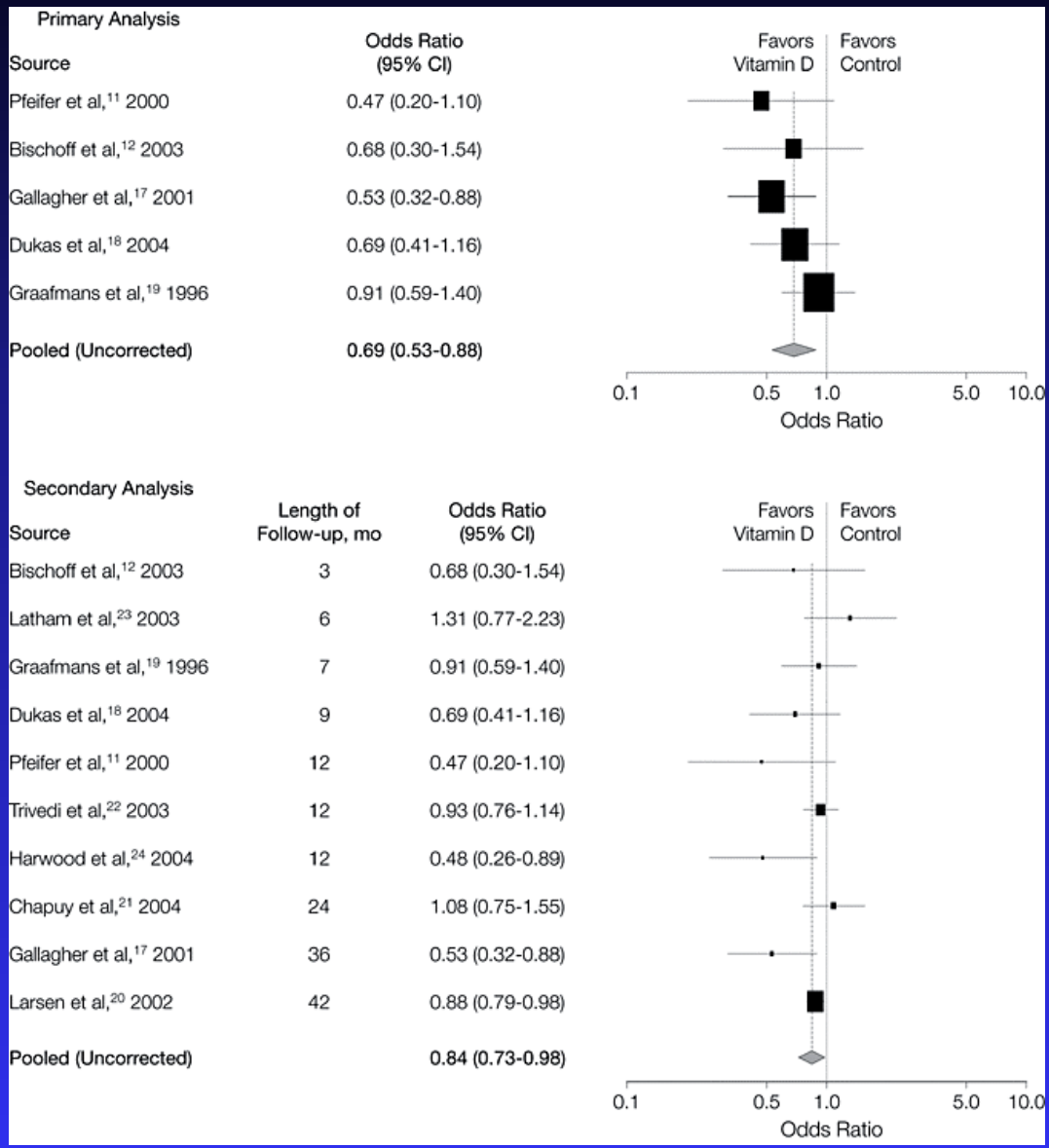
Sources of Vitamin D

- Photosynthesis in the skin
  - Requires UVB radiation
  - Little is needed
  - Latitude, time of day, and skin color are important factors
  - E.g. for someone of European background of average skin type who lives in the northern US: 5 min/day at noon, 3x/week, 6 months/yr
  - Or do we really need more?

Consequences of Too Little Vitamin D

- Musculoskeletal
  - In children: rickets
  - In adults: osteoporosis, fractures
  - In elderly: falls as well
  - These consequences are undisputed
- Multiple sclerosis?
- Hypertension?
- Depression?
- Cancer?

Vitamin D Supplements and Risk of Falling



Bischoff-Ferrari, H. A. et al. JAMA 2004;291:1999-2006.

JAMA

Vitamin D and Cancer

- Colorectal cancer
  - Some observational studies suggest protective effect

    Garland et al, *Lancet* 1989;1176-1178
  - Perhaps only at certain levels of calcium intake

    Grau et al, *JNCI* 2003;95:1765-1771

    Kampman et al, *Cancer Causes Control* 2000;11:459-466
  - Evidence for an effect substantial, but not definitive at this point
- Also breast cancer, prostate cancer, others

  Chan et al. *Cancer Causes Control* 1998;9:559-566

Vitamin D and Cancer

- Melanoma
  - Vitamin D hypothesized to prevent melanoma

Garland et al, *Arch Environ Health* 1990;45:261-7

  - Case-control study did not support this hypothesis

Weinstock et al, *J Invest Dermatol* 1992;98:809-811

  - A subsequent prospective but flawed study also failed to find an association

Cornwell et al, *Photoderm Photoimmunol Photomed* 1992;9:109-112.

  - Effect on prognosis suggested

Berwick et al, *J N C I 2005;*

Study of Melanoma Prognosis

- Cohort of 528 melanoma cases followed for 5.4 years
- Solar elastosis associated with improved prognosis
- Suggested explanations
  - Vitamin D from sun
  - Sun induces less aggressive melanomas
- Analogy to SCC
- Notes:
  - No measures of sun exposure after diagnosis
  - No measures of vitamin D status

Berwick et al, *J Natl Cancer Inst* 2005;97:195-199

Vitamin D - Conclusions

- Obtained from diet, supplements, sun
- Minimal sun exposure may be sufficient
- Primary issue is musculoskeletal health
- DRI may need to be increased
- Colorectal cancer may be a risk
- Other connections not yet clear

AAD conference on vitamin D

- Proposed conclusions:
  - DRI may be too low
  - If more needed, take a supplement
  - Advice regarding sun exposure remains, because of skin cancer risks

Artificial Tanning and vitamin D

- Publication from Holick group
  - Convenience sample
  - Tanning lamps users had higher 25-OH vitamin D levels
- Concerns
  - Confounding by
    - Sun exposure
    - Multivitamin intake
    - Diet
    - Ethnic group
  - Sampling bias
  - Conflict of interest
    - Book sales
    - UV Foundation

Tangpricha et al. *Am J Clin Nutr* 2004;80:1645-1649

Political Aspects

- Tanning industry promoting vitamin D as justification for tanning parlors
- UV Foundation is closely linked to that industry
- Artificial UV, if in the B range, may increase vitamin D
- A tanning lamp is more expensive, less convenient than a multivitamin