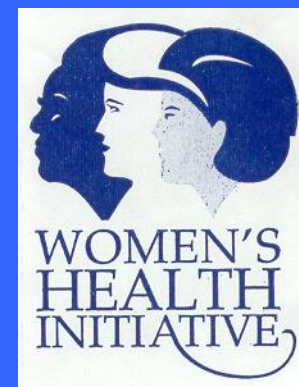


The Effect of Calcium Plus Vitamin D on the Risk of Fractures and Colorectal Cancer:

Principal and Follow-up Results of the Women's Health Initiative Calcium Plus Vitamin D (CaD) Trial

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University of Pittsburgh**

Participant Webinar May 19,2021





Vitamin D— Overhyped or Underused?

by Ginny Graves

The benefits of D sound too good to be true. We investigate.

[Diseases Vitamin D Fights](#)

08.24.2010

[Health](#) : [Healthy Eating](#)

More.com/Sept 2010

What Does Oprah Say?



- Your Vitamin D level should be >30
- If you can't get 15 min of sun per day, take a supplement containing $\geq 1,000$ IU of D_3 , or chug a Tbsp of cod liver oil every morning
- With her assistance, market growth of vitamin D supplements reached triple digits
 - In 2005-2006, 37% of people in the US reported use of dietary supplement containing vitamin D
 - \$366 million in 2009

(source: www.nutraingredients.com)

What did we Know about Calcium and Vitamin D and Fractures when WHI was initiated?

- Little benefit of CaD in preventing bone loss at menopause but beneficial in older women.
- Data regarding CaD and hip and other fractures not conclusive.
 - One study in a French Nursing home showed a benefit of Vitamin D for hip fracture

– BUT NO



– Participants were all Vitamin D deficient.

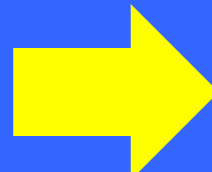
Background: CAD and Colon and Rectal Cancer

- Studies suggested higher calcium and vitamin D intakes may:
 - Lower risk of colorectal cancer
 - Lower risk of polyp recurrence
- Randomized trials found calcium supplements:
 - Lowered risk of polyp recurrence
- No large randomized trials on CaD supplementation and prevention of colorectal cancer

What were the Calcium and Vitamin D Guidelines when WHI started?

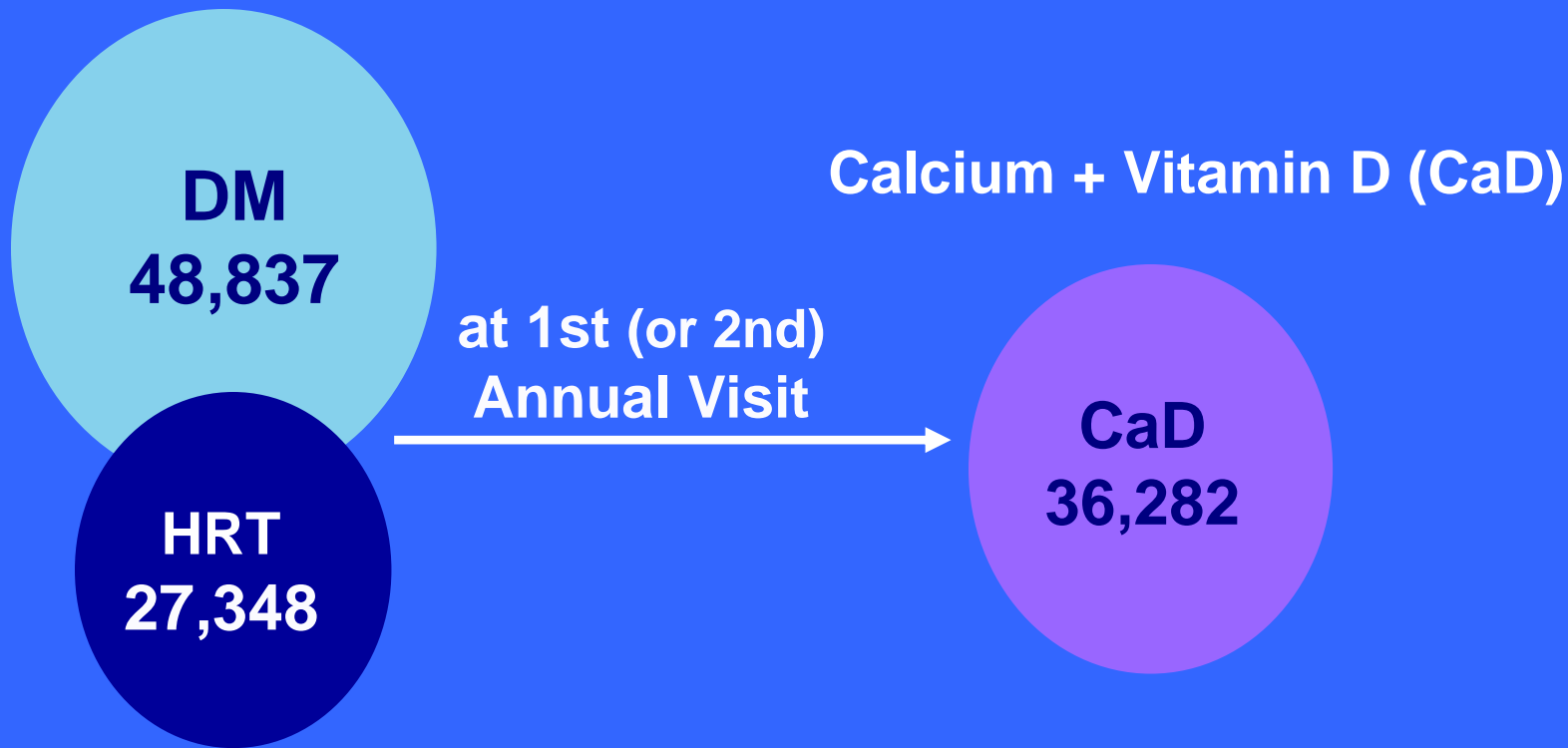
- NIH Consensus Development Conference (1994)
 - 1,000-1,500 mg /day calcium
 - 400 IU Vitamin D

300 mg Ca in 1 Cup



WHI CaD: Relationship to CT

Total CT = 68,135



CaD Trial Objectives

- To examine the effect of CaD on:
 - Hip fractures (Primary)
 - Total Fractures (Secondary)
 - Colorectal Cancer (Secondary)
- Hypotheses: Women randomized to CaD will have a lower risk of each outcome
- Examine the effect of adherence
 - (Do you actually take your study medication)

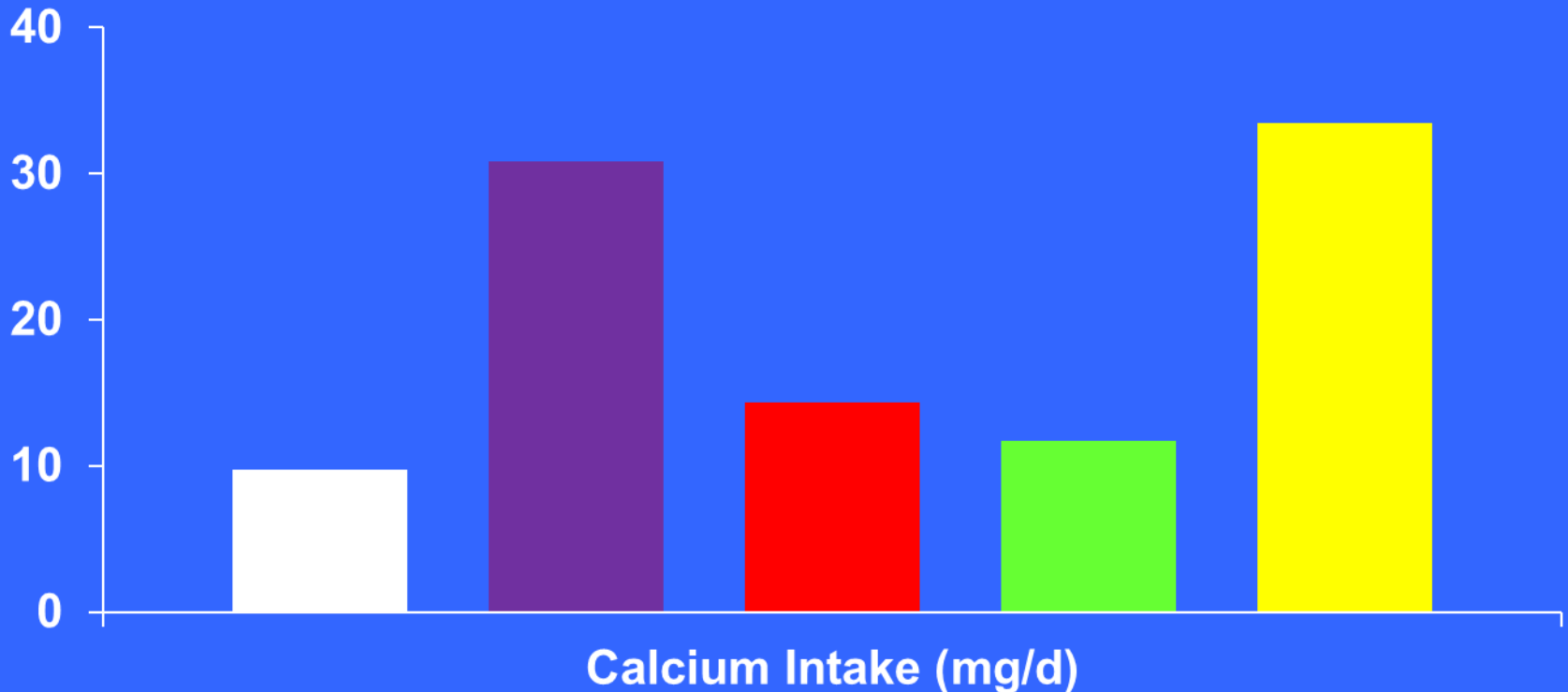
CaD Intervention

- Randomly assigned to supplement or placebo
- Each active tablet 500 mg calcium (as CaCO_3) and 200 IU vitamin D
- Two tablets per day
 - Divided dose; with meals
- Chewable or swallowable choice beginning Oct, 1997

Total Daily Calcium Intake in WHI CaD Participants at the beginning.

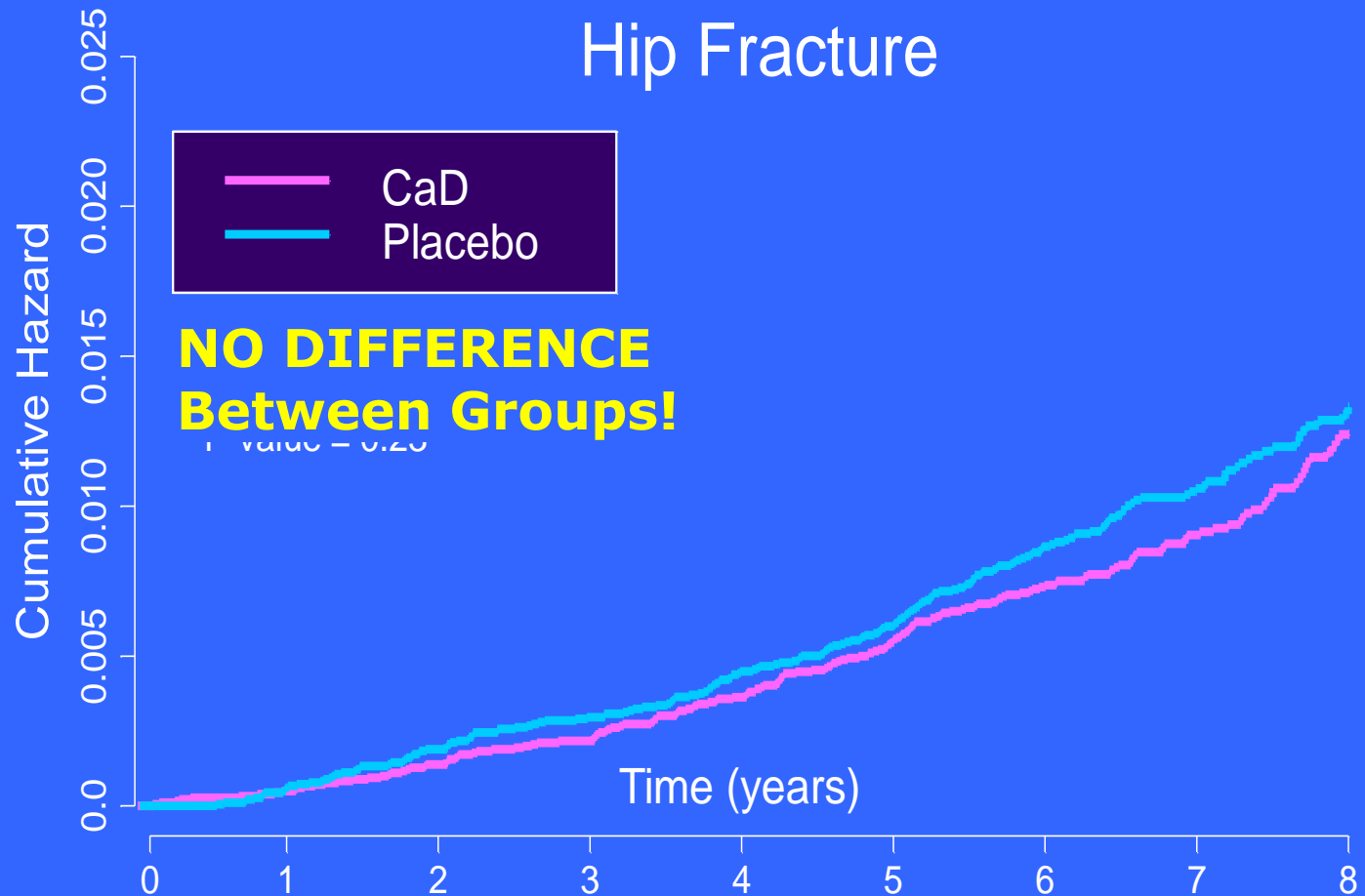
Total Calcium

■ < 400 ■ 400-800 ■ 800-1000 ■ 1000-1200 ■ > 1200



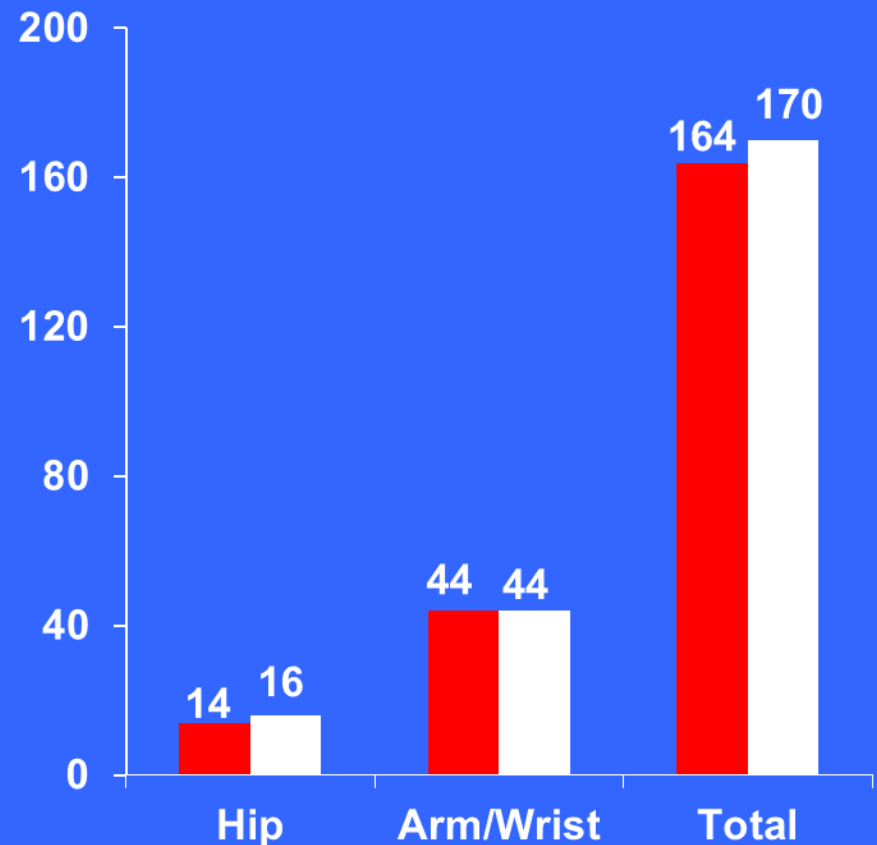
What were the scientific results?

HIP Fracture Results

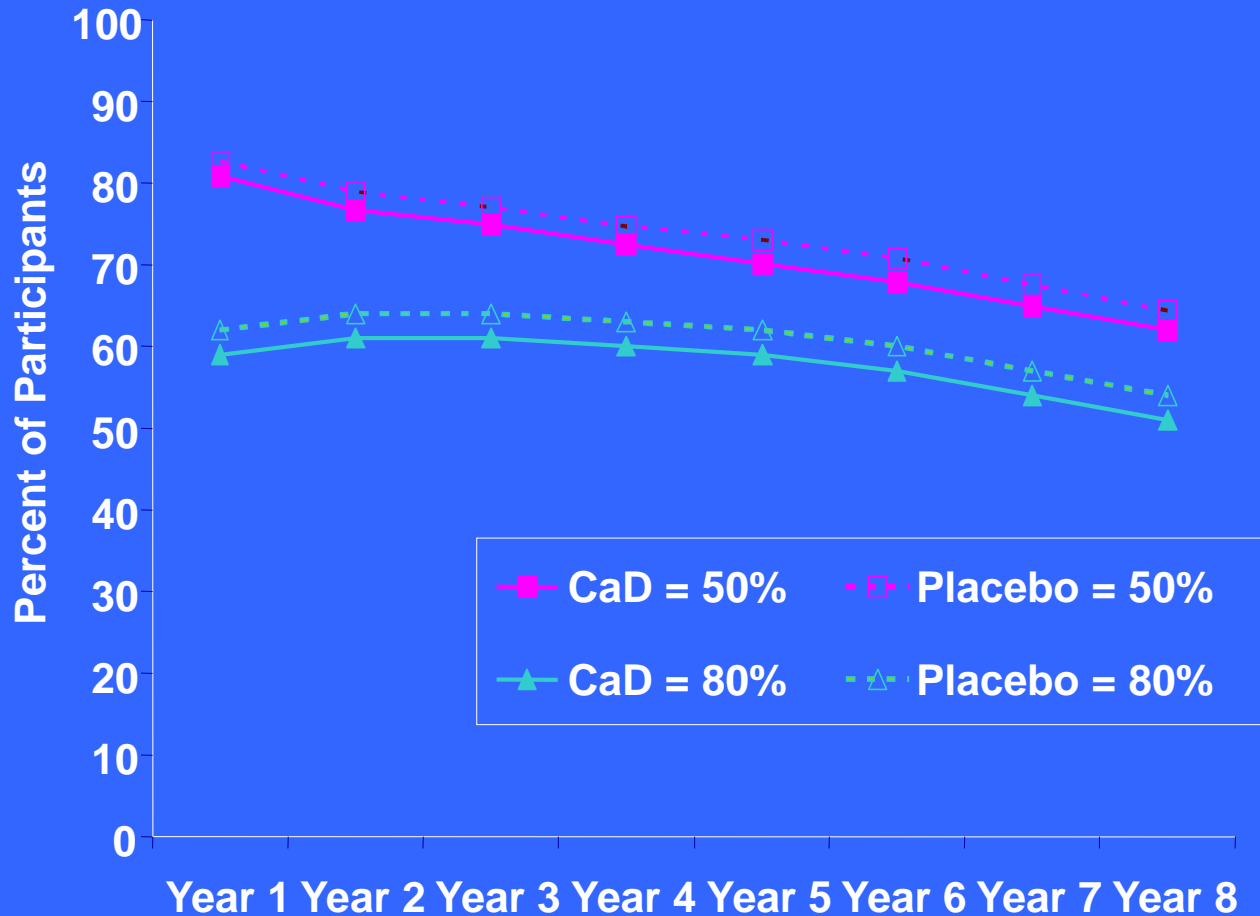


What about other Fractures?

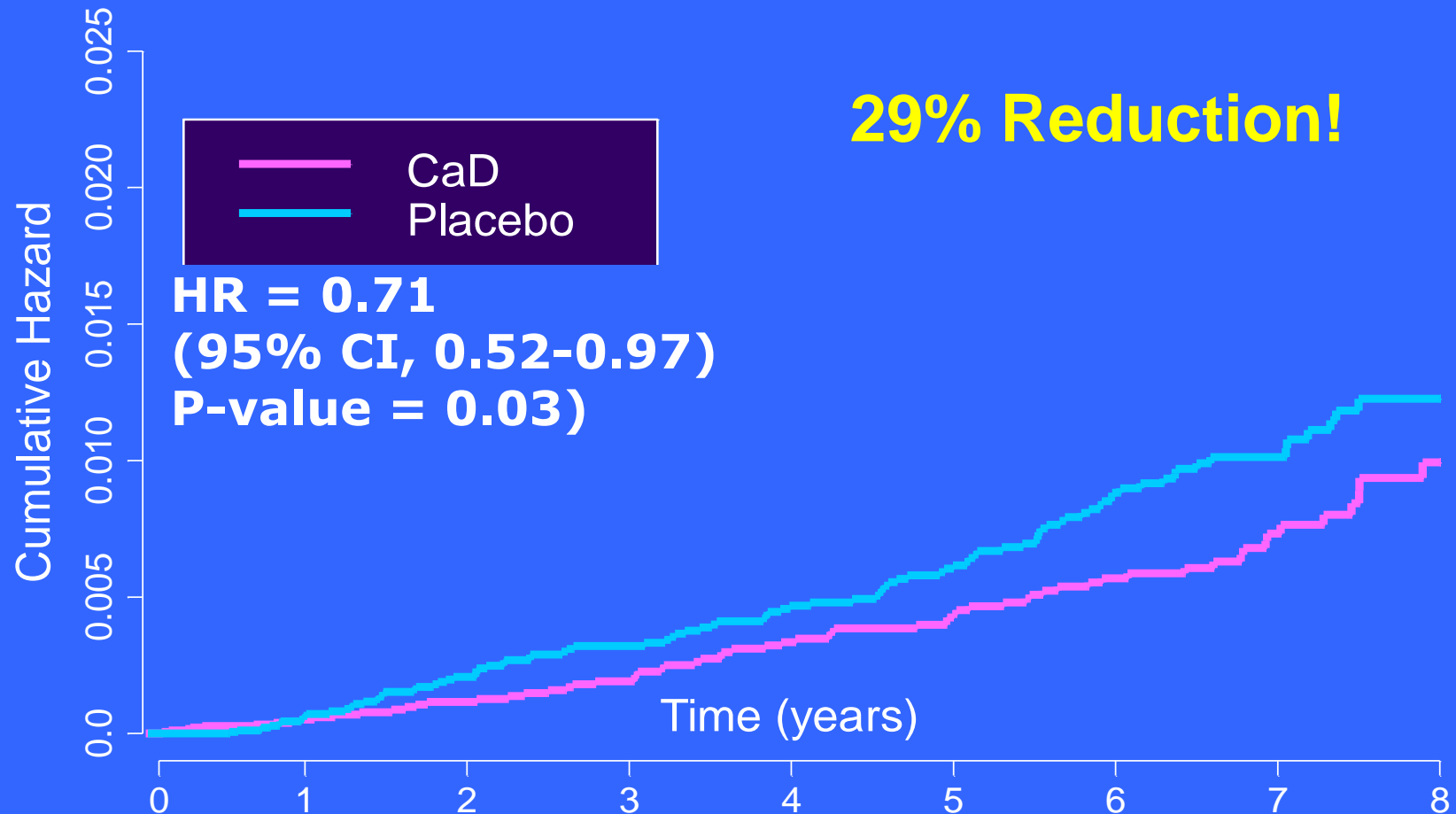
■ Annualized fracture rates per 10,000 person-years



CaD Adherence Over Time



Hip Fracture Results while Adherent

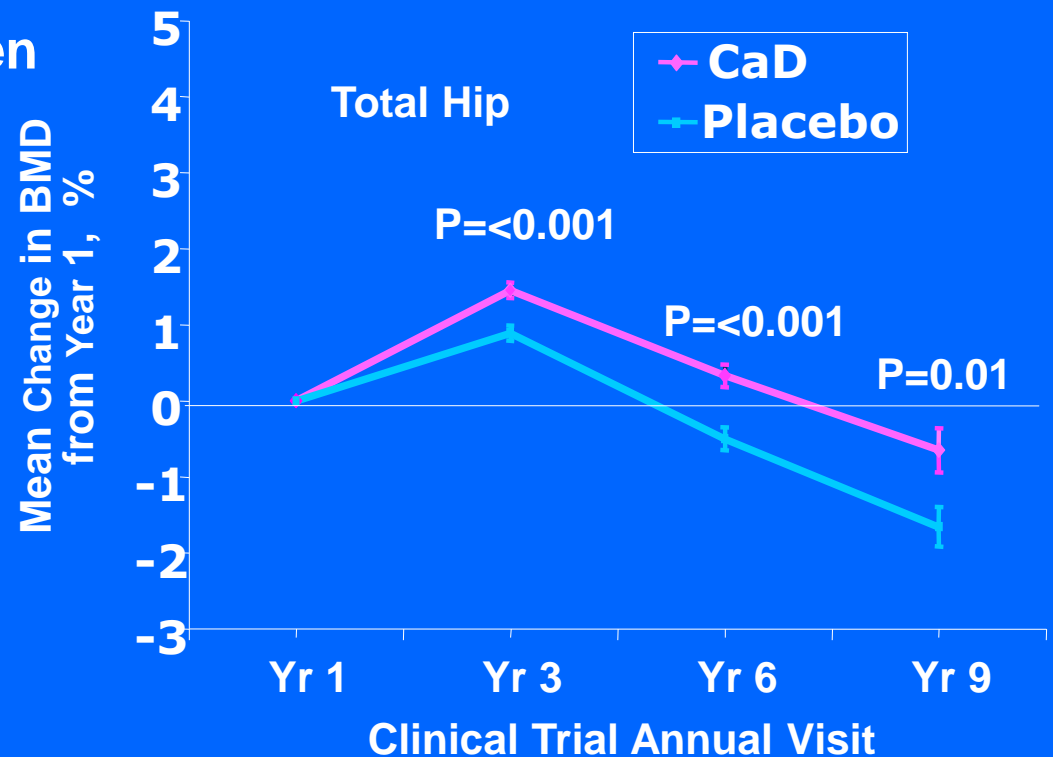


Bone Mineral Density Results

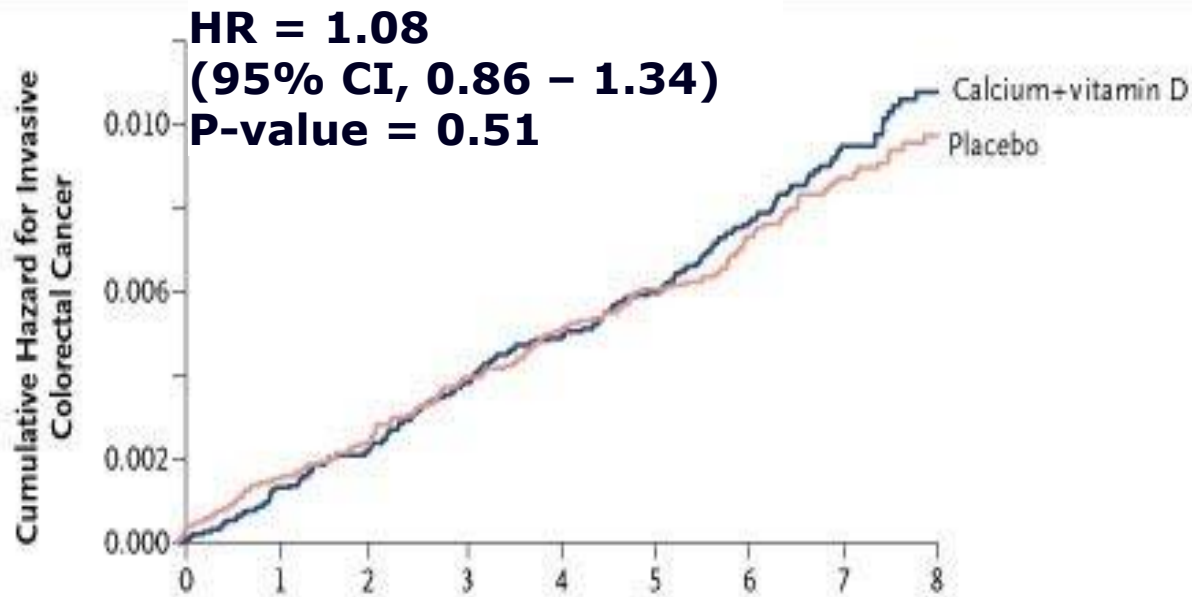
Greater preservation in total hip BMD

Average differences between CaD and placebo groups:

- 0.56% at AV3
- 0.83% at AV6
- 1.01% at AV9

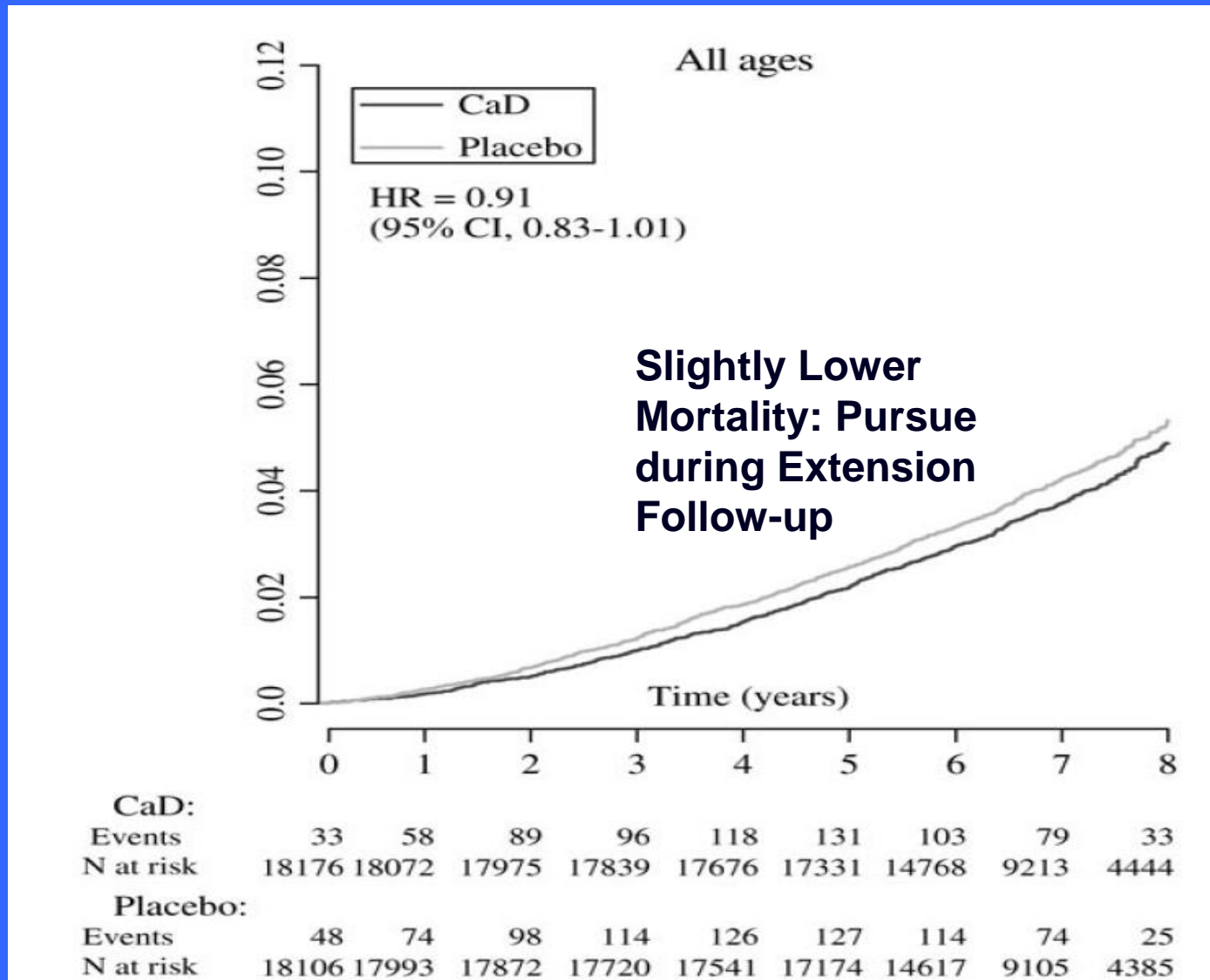


Colorectal Cancer Results



No Difference !
Similar Polyp reports

Cumulative Mortality (Number of Deaths)



Long-term Follow-up: Thank you for continuing your participation!

- Duration of supplement use
 - Among women taking on CaD supplements
- 12 year follow-up results

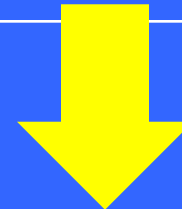
Hip Fracture: Longer Years of CaD supplement use lower hip fractures

All Subjects

Years	
<2	0.81 (0.5,1.3)
2-5	1.03 (0.8,1.4)
>5	0.78 (0.6, 1.0)

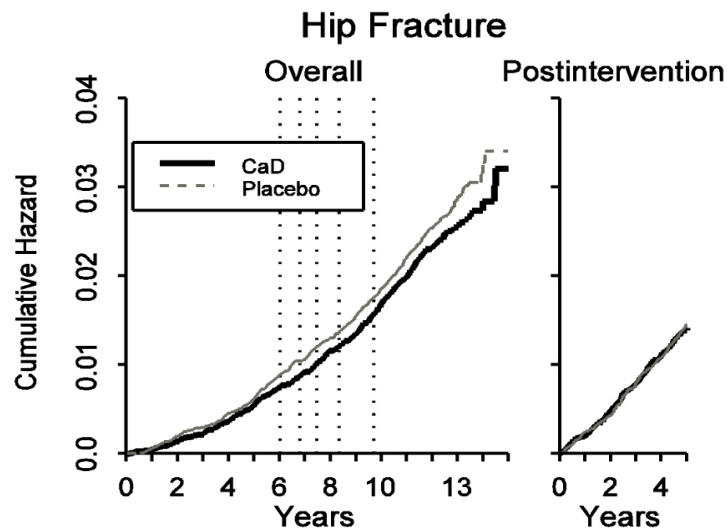
NO personal use of supplements

Years	
<2	1.15 (0.6, 2.3)
2-5	1.04 (0.7, 1.6)
>5	0.65 (0.4, 0.98)



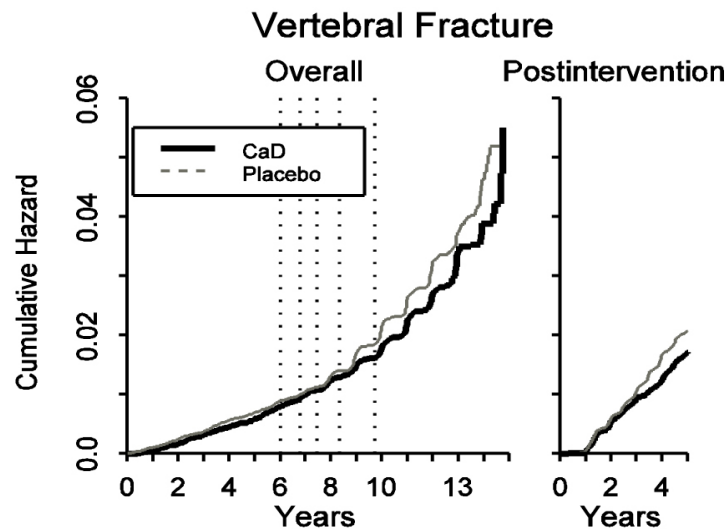
**35% Reduction for
5+ Years of use**

12 Year CaD Extension results



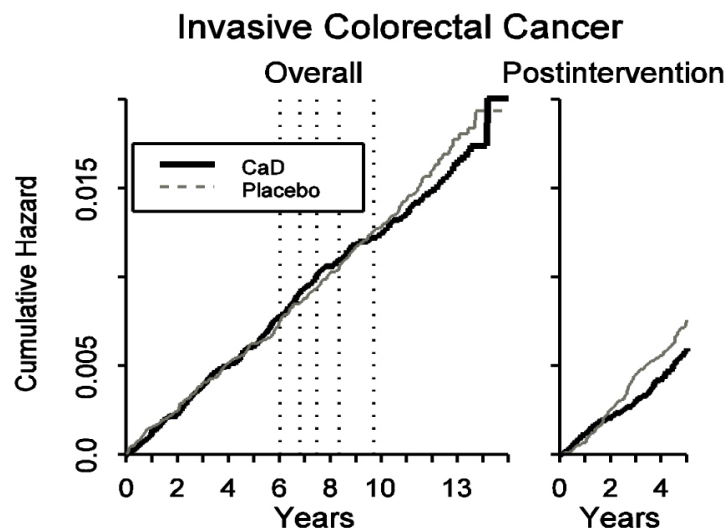
No. at Risk

CaD	18176	17802	16901	14665	7367	901	15025	14249
Placebo	18106	17674	16730	14478	7282	827	14837	14031



No. at Risk

CaD	18176	17784	16891	14632	7365	901	15025	14210
Placebo	18106	17662	16730	14447	7228	826	14837	13980



No. at Risk

CaD	18176	17782	16915	14687	7434	914	15025	14322
Placebo	18106	17667	16769	14544	7332	841	14837	14108

13 % Lower risk Of Spine fracture, the most common fracture associated with osteoporosis

Cauley JA et al. Journal of Women's Health 2013;22(11):915.

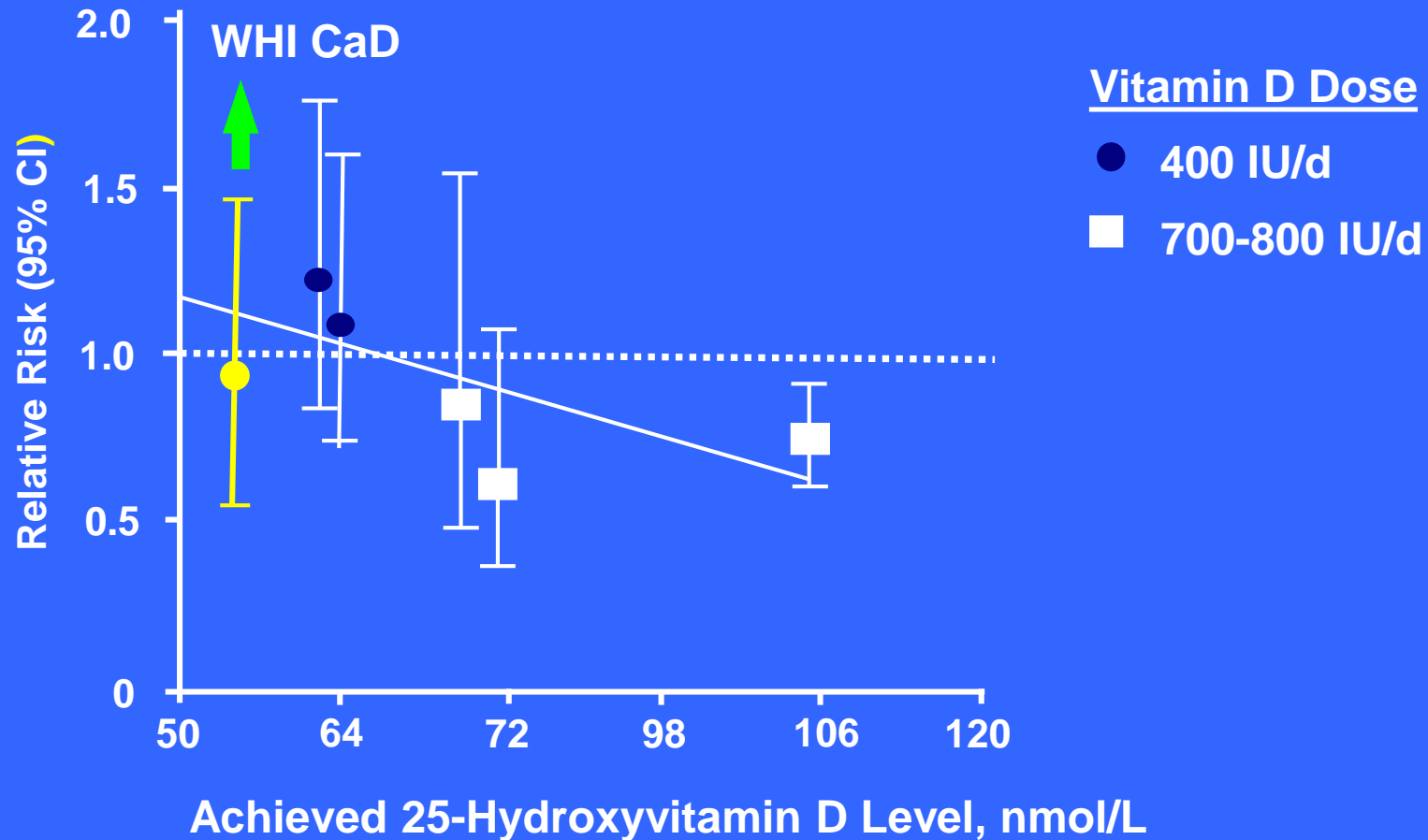
Conclusions

- Daily CaD supplementation for an average of 7 years did not prevent hip fractures or colorectal cancer
- Sensitivity Analyses
 - Adherent women: 21 % lower Hip Fracture
 - Older women: beneficial effect for hip fracture
- Longer duration of CaD use may be beneficial
- Continued follow-up over an additional 5 years: 13 % Lower Spine fracture
- Analyses continuing

Interpretation of Study Results

- Was the Dose of Vitamin D: Too low

Hip Fracture Efficacies by Achieved 25-Hydroxyvitamin D Levels in 400 IU/d and 700-800 IU/d Vitamin D-Treated Groups



What is research... but a Blind Date with Knowledge.



Thank you for taking the leap with us. We could not have done it without you.

Thank you to All WHI Participants!

