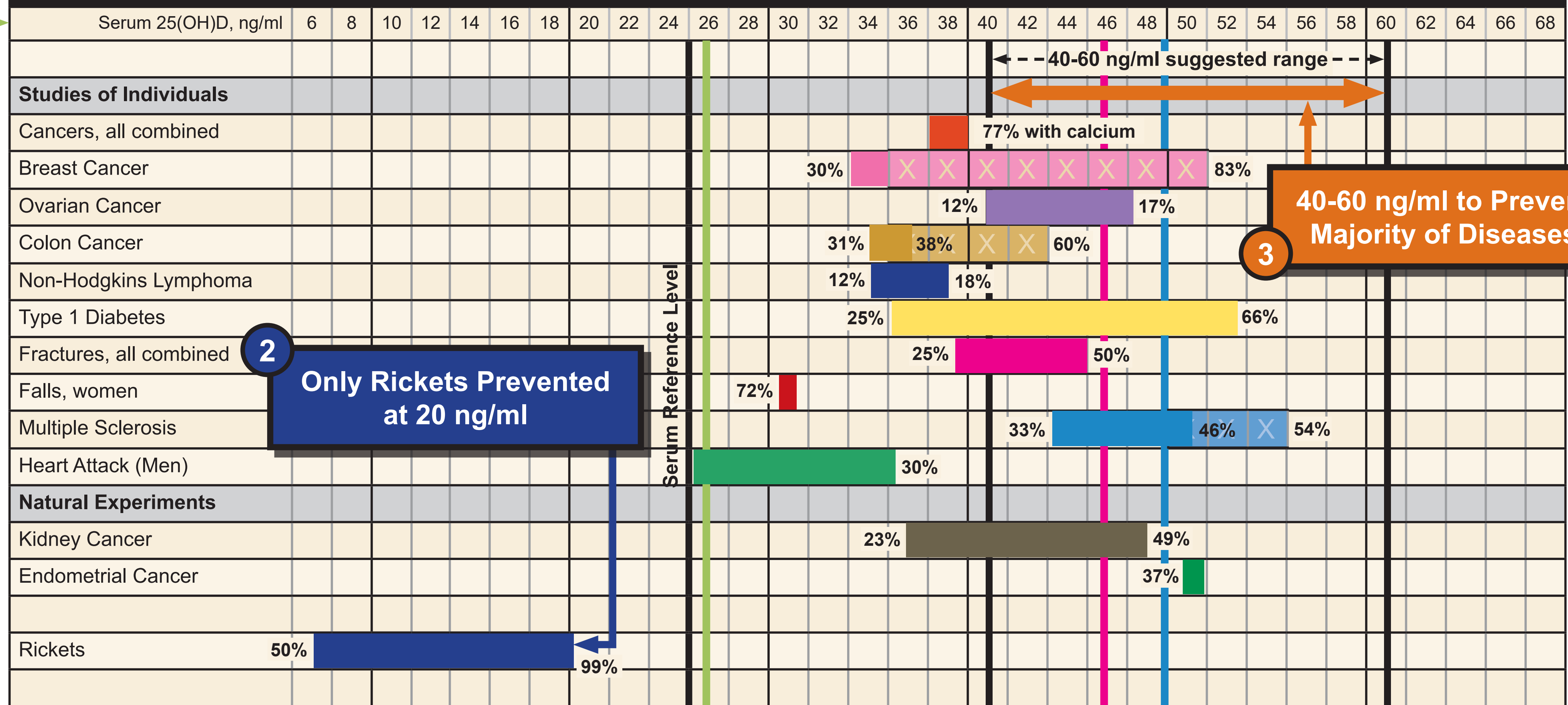


1
Serum Level

Disease Incidence Prevention by Serum 25(OH)D Level



2
Only Rickets Prevented at 20 ng/ml

US & Canadian Average

Outdoor Workers in Late Summer

Tribal East Africans

3
40-60 ng/ml to Prevent Majority of Diseases

Legend:
 All percentages reference a common baseline of 25 ng/ml as shown on the chart.
 %'s reflect the disease prevention % at the beginning and ending of available data.
 Example: Breast cancer incidence is reduced by 30% when the serum level is 34 ng/ml vs the baseline of 25 ng/ml.
 There is an 83% reduction in incidence when the serum level is 50 ng/ml vs the baseline of 25 ng/ml.
 The x's in the bars indicate 'reasonable extrapolations' from the data but are beyond existing data.

References:
 All Cancers: Lappe JM, et al. Am J Clin Nutr. 2007;85:1586-91. Breast: Garland CF, Gorham ED, Mohr SB, Grant WB, Garland FC. Breast cancer risk according to serum 25-Hydroxyvitamin D: Meta-analysis of Dose-Response (abstract). American Association for Cancer Research Annual Meeting, 2008. Reference serum 25(OH)D was 5 ng/ml. Garland, CF, et al. Amer Assoc Cancer Research Annual Mtg, April 2008,. Colon: Gorham ED, et al. Am J Prev Med. 2007;32:210-6. Diabetes: Hyppönen E, et al. Lancet 2001;358:1500-3. Endometrium: Mohr SB, et al. Prev Med. 2007;45:323-4. Falls: Broe KE, et al. J Am Geriatr Soc. 2007;55:234-9. Fractures: Bischoff-Ferrari HA, et al. JAMA. 2005;293:2257-64. Heart Attack: Giovannucci et al. Arch Intern Med/Vol 168 (No 11) June 9, 2008. Multiple Sclerosis: Munger KL, et al. JAMA. 2006;296:2832-8. Non-Hodgkin's Lymphoma: Purdue MP, et al. Cancer Causes Control. 2007;18:989-99. Ovary: Tworoger SS, et al. Cancer Epidemiol Biomarkers Prev. 2007;16:783-8. Renal: Mohr SB, et al. Int J Cancer. 2006;119:2705-9. Rickets: Arnaud SB, et al. Pediatrics. 1976 Feb;57(2):221-5. Canadians: Janz T. Pearson C. Vitamin D blood levels of Canadians. Statistics Canada. 2013 January; ISSN 1925-6493. US: Al-khalidi et al., Standardized serum 25-hydroxyvitamin D concentrations are inversely associated with cardiometabolic disease in U.S. adults: a cross-sectional analysis of NHANES, 2001-2010. Nutrition Journal. 2017, 16:16. Tribal Africans: Luxwolda M.F. et al. Traditionally living populations in East Africa have a mean serum 25-hydroxyvitamin D concentration of 115 nmol/L. Br J Nutr. 2012 November; 108(9):1557-61. Outdoor Workers: Barger-Lux M.J. Heaney R.P. Effects of Above Average Summer Sun Exposure on Serum 25-Hydroxyvitamin D and Calcium Absorption. J Clin Endocrinol Metab. 2002 November. 87(11):4952-6