Vitaminpillen – mehr Schaden als Nutzen?

Prof. Dr. med Ingrid Mühlhauser

Es gilt das gesprochene Wort!

Meine Interessenkonflikte

3 Szenarien

Prävention von Knochenbrüchen

Frauen mit …	**Medikamente 1000 Frauen über 7 Jahre**	**Placebo 1000 Frauen über 7 Jahre**
Hüftbruch	10	11
Wirbelbruch mit Beschwerden	10	11
Unterarm- oder Handgelenkbruch	31	31
Irgendeinem Knochenbruch	115	119
Nierensteinen	25	21

Ich würde die Medikamentenbehandlung empfehlen:

A eher ja
B eher nein

Prävention von Knochenbrüchen

Frauen mit …	**Calcium+Vit. D 1000 Frauen über 7 Jahre**	**Placebo 1000 Frauen über 7 Jahre**
Hüftbruch	10	11
Wirbelbruch mit Beschwerden	10	11
Unterarm- oder Handgelenkbruch	31	31
Irgendeinem Knochenbruch	115	119
Nierensteinen	25	21

Ich würde die **Calcium+Vitamin D** Behandlung empfehlen:

A eher ja
B eher nein

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 FEBRUARY 16, 2006 VOL. 354 NO. 7

Calcium plus Vitamin D Supplementation and the Risk of Fractures

Rebecca D. Jackson, M.D., Andrea Z. LaCroix, Ph.D., Margery Gass, M.D., Robert B. Wallace, M.D., John Robbins, M.D., Cora E. Lewis, M.D., Tamsen Bassford, M.D., Shirley A.A. Beresford, Ph.D., Henry R. Black, M.D., Patricia Blanchette, M.D., Denise E. Bonds, M.D., Robert L. Brunner, Ph.D., Robert G. Brzyski, M.D., Bette Caan, Dr.P.H., Jane A. Cauley, Dr.P.H., Rowan T. Chlebowski, M.D., Steven R. Cummings, M.D., Iris Granek, M.D., Jennifer Hays, Ph.D., Gerardo Heiss, M.D., Susan L. Hendrix, D.O., Barbara V. Howard, Ph.D., Judith Hsia, M.D., F. Allan Hubbell, M.D., Karen C. Johnson, M.D., Howard Judd, M.D., Jane Morley Kotchen, M.D., Lewis H. Kuller, M.D., Robert D. Langer, M.D., Norman L. Lasser, M.D., Marian C. Limacher, M.D., Shari Ludlam, M.P.H.,

Frauengesundheitsstudie (WHI Studie), USA

- 36.282 Frauen, 50 bis 79 Jahre
- 1000 mg Calcium + 400 IU Vitamin D3 im Vergleich zu Placebo
- Studiendauer 7 Jahre

N Engl J Med 2006;354:669-83.

Prävention von Prostatakrebs

- In einer randomisiert-kontrollierten Studie mit insgesamt 35.533 Männern zur Prävention von Prostatakrebs mit Vitamin E über etwa 5,5 Jahre betrug die relative Risikodifferenz 17%; *p=0.008*.

Ich würde die Vitaminbehandlung empfehlen:

A eher ja
B eher nein

Prävention von Prostatakrebs

- In einer randomisiert-kontrollierten Studie mit insgesamt 35.533 Männern zur Prävention von Prostatakrebs mit Vitamin E über etwa 5,5 Jahre betrug die relative Risikodifferenz **– zu Ungunsten von Vitamin E –** 17%; *p=0.008*.

Zunahme statt Abnahme von Prostatakrebs

ORIGINAL CONTRIBUTION

Vitamin E and the Risk of Prostate Cancer

The Selenium and Vitamin E Cancer Prevention Trial (SELECT)

Eric A. Klein, MD
Ian M. Thompson Jr, MD
Catherine M. Tangen, DrPH
John J. Crowley, PhD
M. Scott Lucia, MD
Phyllis J. Goodman, MS
Lori M. Minasian, MD
Leslie G. Ford, MD
Howard L. Parnes, MD
J. Michael Gaziano, MD, MPH

Context The initial report of the Selenium and Vitamin E Cancer Prevention Trial (SELECT) found no reduction in risk of prostate cancer with either selenium or vitamin E supplements but a statistically nonsignificant increase in prostate cancer risk with vitamin E. Longer follow-up and more prostate cancer events provide further insight into the relationship of vitamin E and prostate cancer.

Objective To determine the long-term effect of vitamin E and selenium on risk of prostate cancer in relatively healthy men.

Design, Setting, and Participants A total of 35 533 men from 427 study sites in the United States, Canada, and Puerto Rico were randomized between August 22, 2001, and June 24, 2004. Eligibility criteria included a prostate-specific antigen (PSA) of 4.0 ng/mL or less, a digital rectal examination not suspicious for prostate cancer, and age 50 years or older for black men and 55 years or older for all others. The primary analysis included 34 887 men who were randomly assigned to 1 of 4 treatment

JAMA. 2011;306(14):1549-1556

2011 INAL CONTRIBUTION

Vitamin E and the Risk of Prostate Cancer

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JAMA. 2011;306(14):1549-1556

USA, Canada, Puerto Rico

- 35.533 Männer
- Vitamin E (400 IU/d) und/oder Selen (200 µg/d) im Vergleich zu Placebo
- Vorzeitiger Studienabbruch nach 5,5 Jahren

JAMA. 2011;306(14):1549-1556

Beta-Carotin, Vitamine A, C, E, Selen

- Die Auswertung von 38 hochwertigen randomisiert-kontrollierten Studien, mittlere Dauer 3 Jahre, mit insgesamt etwa 52.000 Teilnehmern ergab einen Unterschied in der Sterberate von einem Prozentpunkt (1 von 100).

Ich würde die Vitaminbehandlung empfehlen:

A eher ja
B eher nein

Beta-Carotin, Vitamine A, C, E, Selen

- Die Auswertung von 38 hochwertigen randomisiert-kontrollierten Studien, mittlere Dauer 3 Jahre, mit insgesamt etwa 52.000 Teilnehmern ergab einen Unterschied in der Sterberate **– zu Ungunsten der Antioxidantien –** von einem Prozentpunkt (1 von 100).

2012

Antioxidant supplements for prevention of mortality in healthy participants and patients with various diseases (Review)

Bjelakovic G, Nikolova D, Gluud LL, Simonetti RG, Gluud C

Cochrane Database of Systematic Reviews 2012, Issue 3.

2012

Antioxidant supplements for prevention of mortality in healthy participants and patients with various diseases (Review)

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Cochrane Database of Systematic Reviews 2012, Issue 3.

Antioxidant supplements for prevention of mortality in healthy participants and patients with various diseases

Beta-Carotin, Vitamine A, C, E, Selen
78 Studien (randomisiert-kontrolliert)
296.707 Studienteilnehmer

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2012, Issue 3.

Antioxidant supplements for prevention of mortality in healthy participants and patients with various diseases

Authors‘ conclusions:

We found no evidence to support antioxidant supplements for primary or secondary prevention.

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2012, Issue 3.

Antioxidant supplements for prevention of mortality in healthy participants and patients with various diseases

Authors‘ conclusions:

Beta-carotene and vitamin E seem to increase mortality, and so may higher doses of vitamin A.

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2012, Issue 3.

Antioxidant supplements for prevention of mortality in healthy participants and patients with various diseases

Authors‘ conclusions:

Antioxidant supplements need to be considered as medical products and should undergo sufficient evaluation before marketing.

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2012, Issue 3.

Methodisches Vorgehen

Evidenz-basierte Medizin

IQWiG Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen

Institute for Quality and Efficiency in Health Care

Allgemeine Methoden

Version 4.0 vom 23.09.2011

Evidenz-basierte Medizin

- Hilft durch qualitativ hochwertige wissenschaftliche Studien die Unsicherheit über Nutzen und Schaden bei medizinischen Entscheidungen zu vermindern.

Definition Nutzen / Schaden

IQWIG – Methoden 2011

Definition Patientennutzen

- Gemäß § 35b des SGB V sollen beim Patientennutzen insbesondere die Verbesserung des Gesundheitszustandes, eine Verkürzung der Krankheitsdauer, eine Verlängerung der Lebensdauer, eine Verringerung der Nebenwirkungen sowie eine Verbesserung der Lebensqualität angemessen berücksichtigt werden.

IQWIG – Methoden 2011

Zielgrößen Patientennutzen

- Mortalität
- Morbidität (Beschwerden und Komplikationen)
- Gesundheitsbezogene Lebensqualität

Keine Zielgrößen für Patientennutzen

- Vitaminspiegel
- Antioxidative Effekte
- Pathophysiologische Variablen
- Immunologische Variablen
- Bildgebende Verfahren
- .....

Die Fragestellung bestimmt den Studientyp

Hypothesenbildung

- Grundlagenforschung
- Pathophysiologie
- Epidemiologie

Nachweis von Wirksamkeit und Nutzen

- Randomisiert-kontrollierte verblindete Studien mit patientenrelevanten Zielgrößen

Nachweis von Wirksamkeit und Nutzen

- Randomisiert-kontrollierte verblindete Studien mit patientenrelevanten Zielgrößen
- Systematische Reviews und Meta-Analysen von randomisiert-kontrollierten Studien

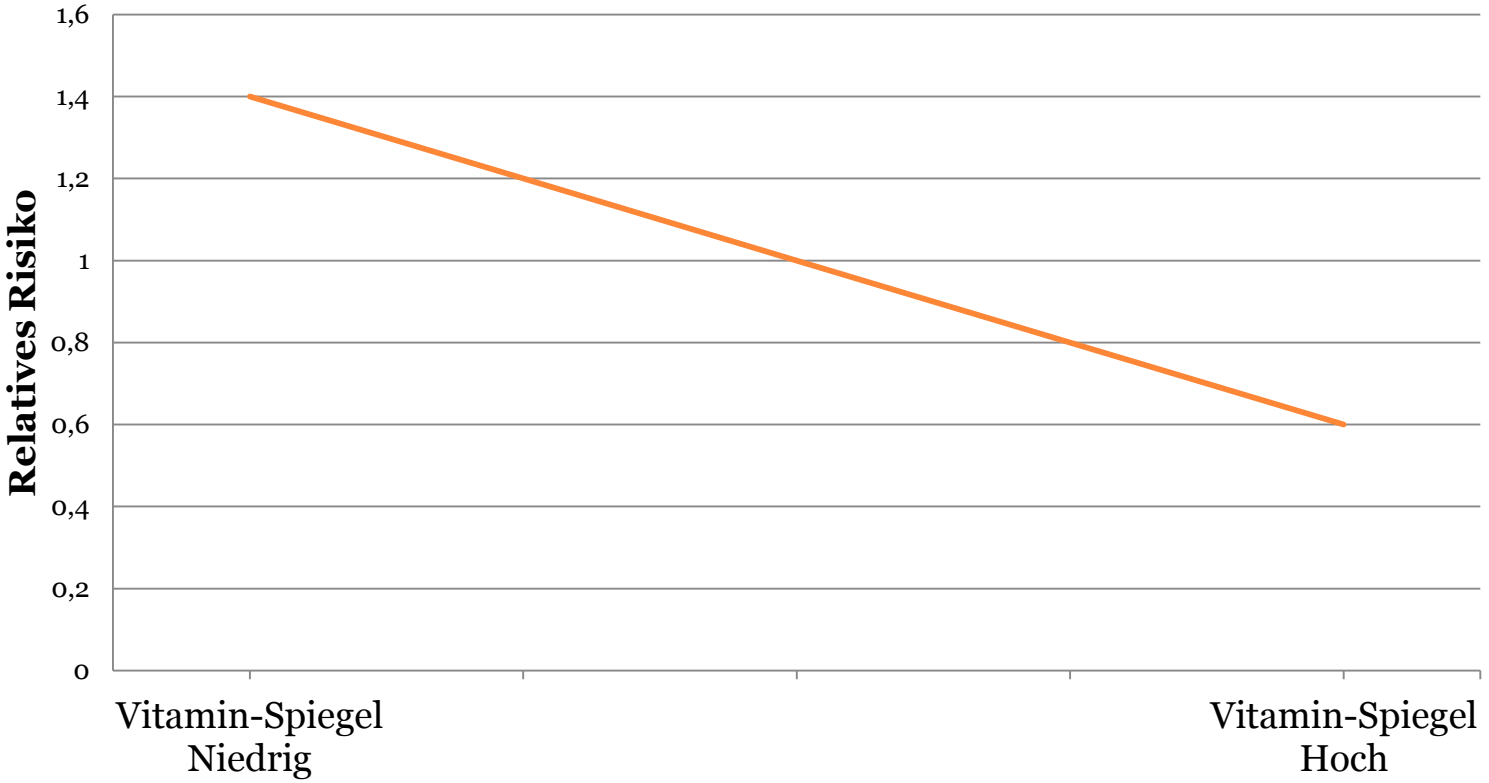
Vitamine und Krankheit

- Laborexperimente
- Pathophysiologische Konzepte
- Klinische Beobachtungen
- Epidemiologische Analysen
- .....

Vitaminspiegel erniedrigt bei

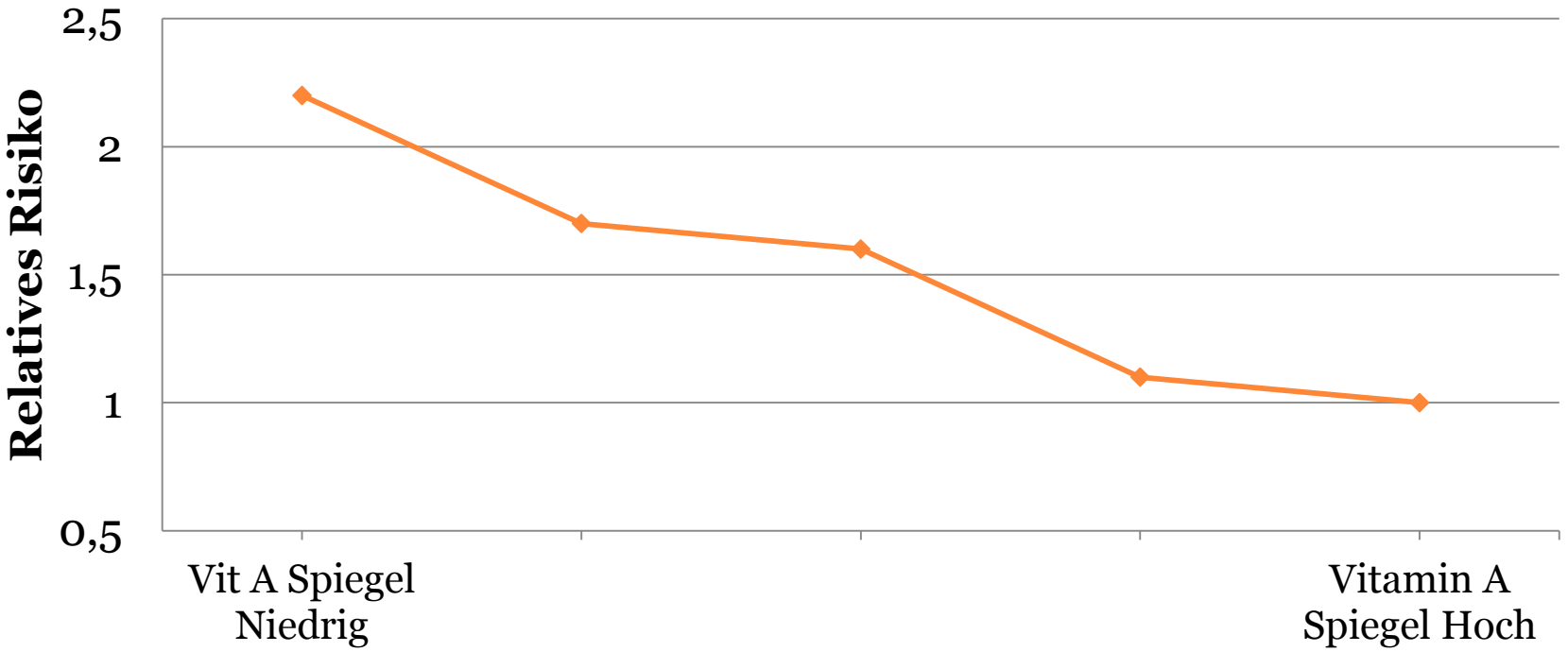
- Herzkreislauferkrankungen
- Krebs
- Infektionskrankheiten
- .....

Zusammenhang zwischen Vitaminspiegel und Krankheitsrisiko



1981

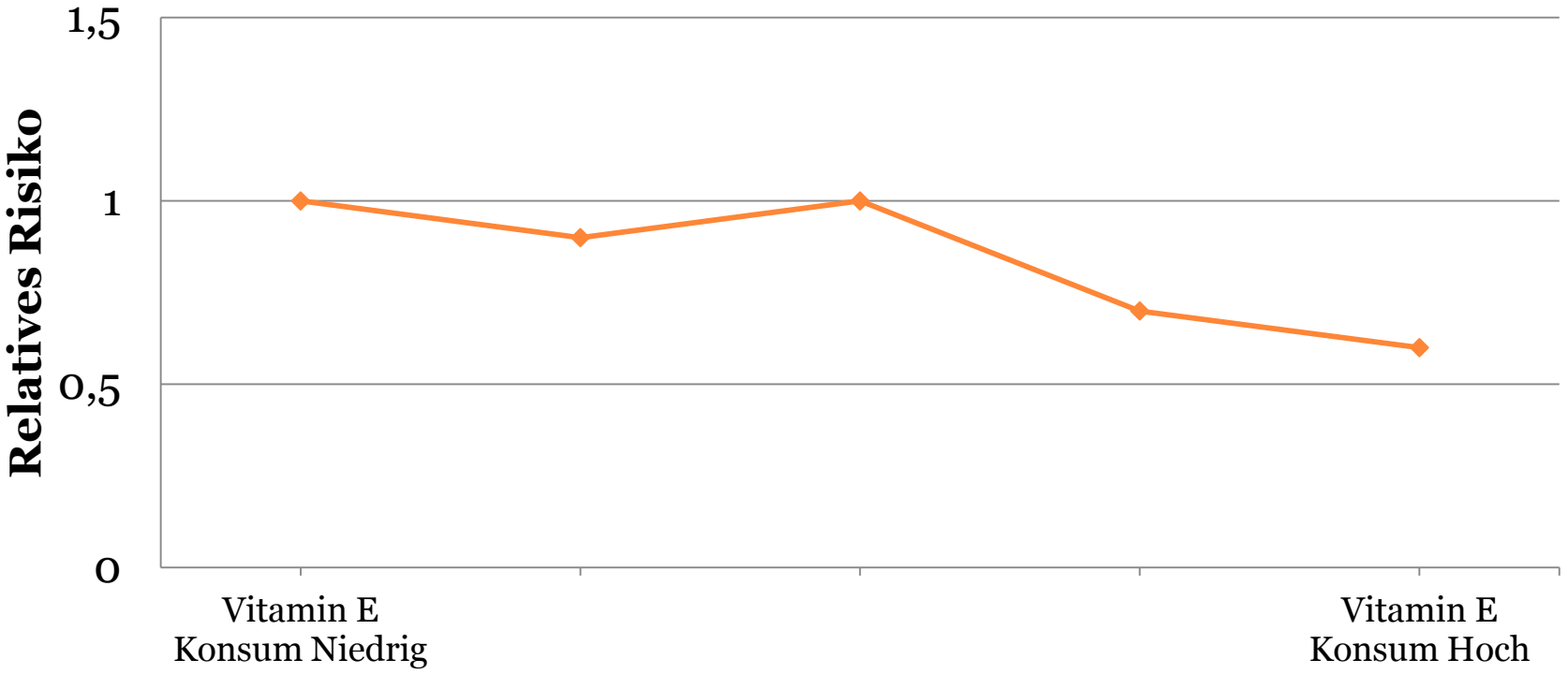
Relatives Risiko für Krebs in Abhängigkeit vom Vitamin A Spiegel



Nach Table 1, Peto et al. Nature 1981

1993

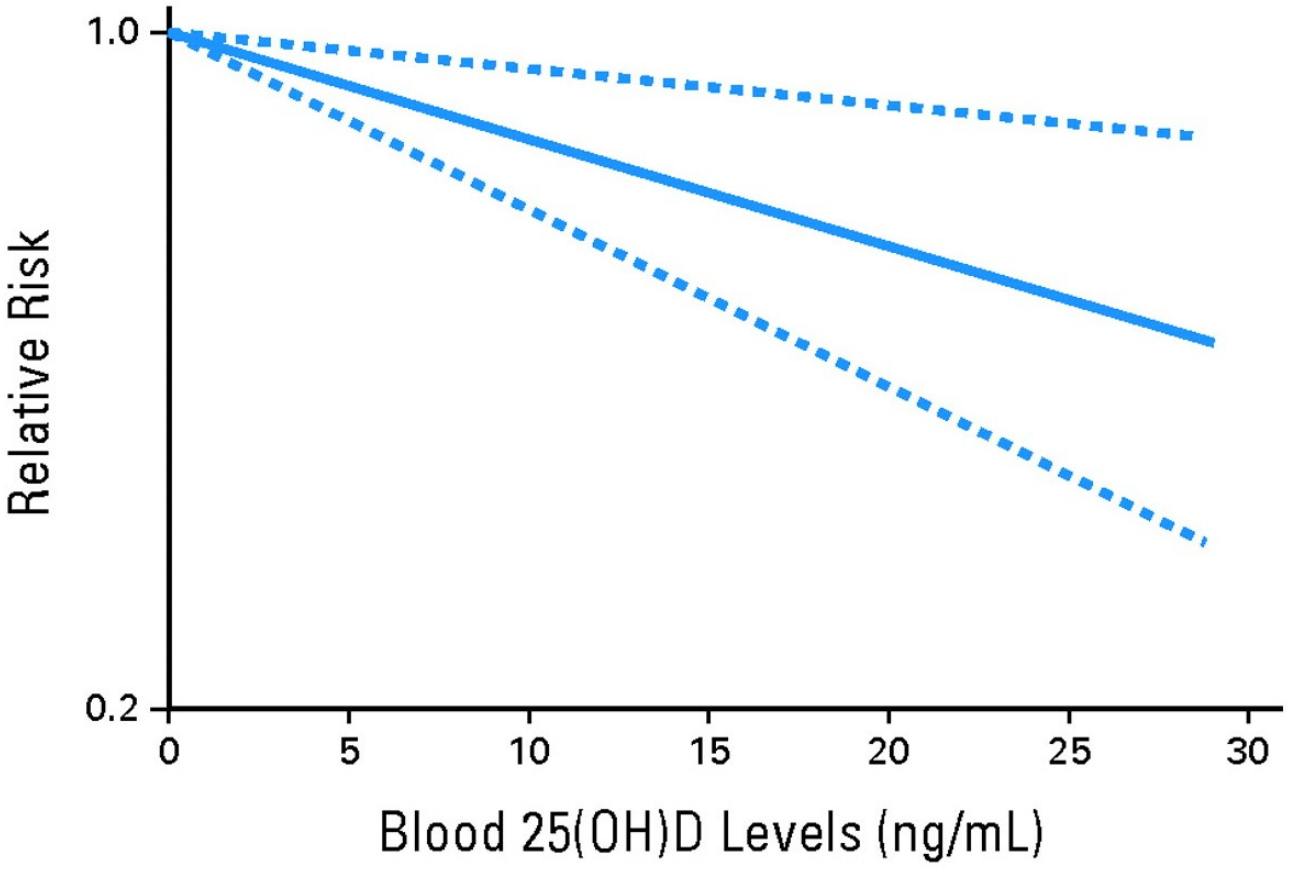
Relatives Risiko für Koronare Herzkrankheit und Vitamin E Konsum



Nach Table 1, Stampfer et al. N Engl J Med 1993

2011

Relatives Risiko für Darmkrebs und Vitamin D Spiegel



©2011 by American Society of Clinical Oncology

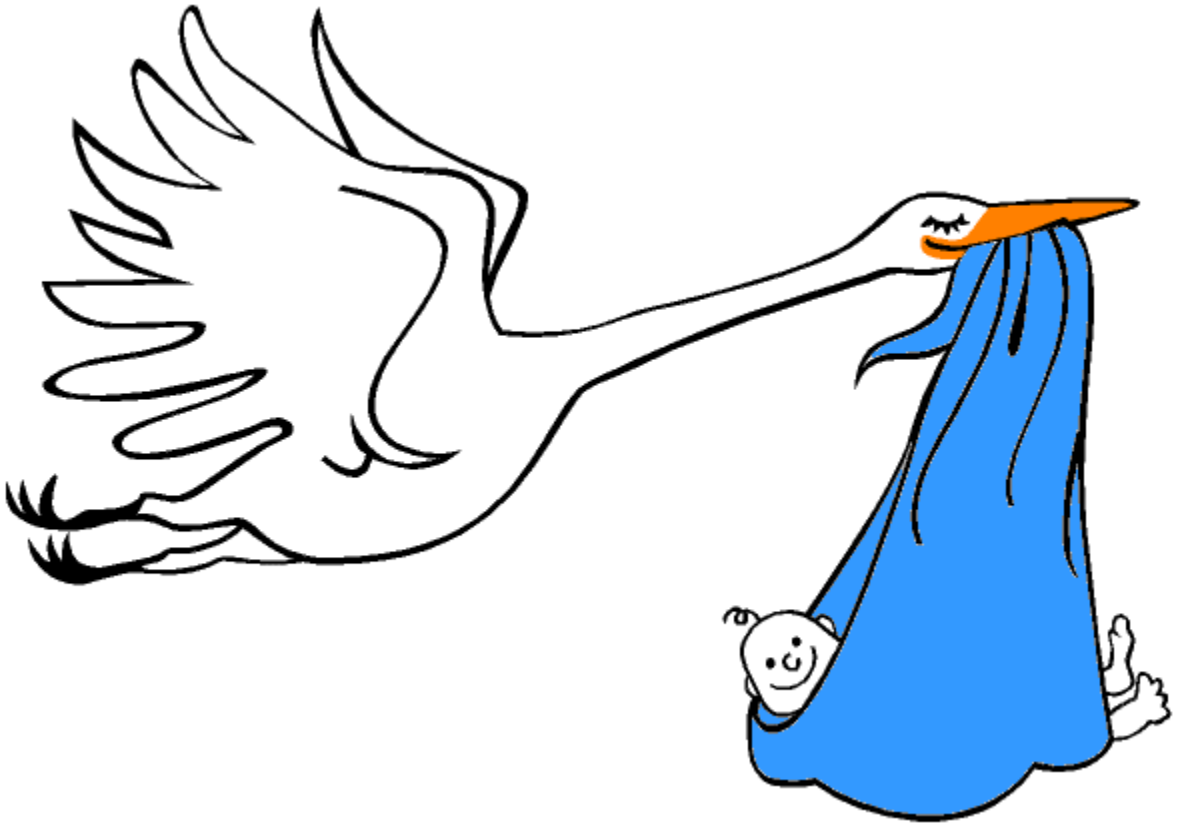
Ma Y et al. JCO 2011;29:3775-3782

Niedrige Vitaminspiegel: Krankheitsfolge oder Krankheitsursache?

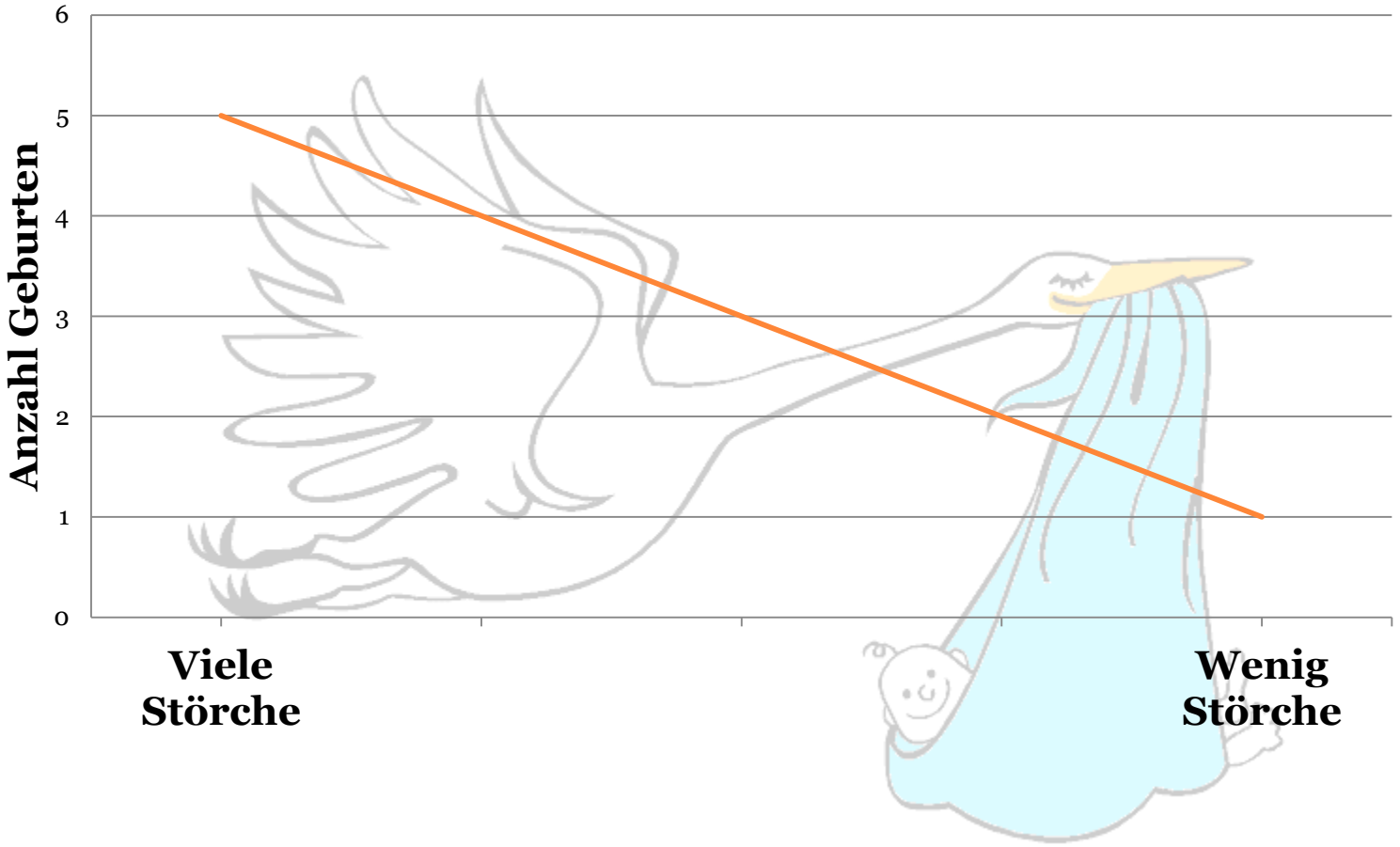
Niedrige Vitaminspiegel:

K

K



Zusammenhang zwischen Anzahl an Störchen und Geburten



Nachweis von Wirksamkeit und Nutzen

- Randomisiert-kontrollierte verblindete Studien mit patientenrelevanten Zielgrößen
- Systematische Reviews und Meta-Analysen von randomisiert-kontrollierten Studien

Qualität der Studien?

Publication bias?

BMJ

344:1-52 No 7838 ISSN 1759-2151
7 January 2012 | bmj.com

Laparoscopic colorectal surgery
Maintaining weight loss in adults
In search of beneficial drug reactions
Gambling addiction: a patient's journey

MISSING TRIAL DATA

Why we need the full picture

Beta-Carotin / Vitamin A

Beta-Carotin / Vitamin A und Lungenkrebs

Beta-Carotin – Plausibilität für präventive Wirkung auf Lungenkrebs

- Es handelt sich um ein physiologisches Substrat.

Beta-Carotin – Plausibilität für präventive Wirkung auf Lungenkrebs

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- In mehreren Studien wurde übereinstimmend gezeigt (Konsistenz), dass ein niedriger Vitaminspiegel mit einem erhöhten Krankheits- und Sterberisiko einhergeht.

Beta-Carotin – Plausibilität für präventive Wirkung auf Lungenkrebs

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- Die antioxidative Wirkung des Beta-Carotins ist experimentell belegt und wird als wesentlich zur Vermeidung von Erkrankungen angesehen.

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- Die antioxidative Wirkung des Beta-Carotins ist experimentell belegt und wird als wesentlich zur Vermeidung von Erkrankungen angesehen.
- Durch orale Zufuhr lässt sich der Vitaminspiegel auf „normale“ Werte anheben.

Randomisiert-kontrollierte, verblindete Studien

The New England Journal of Medicine

Volume 330 APRIL 14, 1994 Number 15

THE EFFECT OF VITAMIN E AND BETA CAROTENE ON THE INCIDENCE OF LUNG CANCER AND OTHER CANCERS IN MALE SMOKERS

THE ALPHA-TOCOPHEROL, BETA CAROTENE CANCER PREVENTION STUDY GROUP*

Abstract *Background.* Epidemiologic evidence indicates that diets high in carotenoid-rich fruits and vegetables, as well as high serum levels of vitamin E (alpha-tocopherol) and beta carotene, are associated with a reduced risk of lung cancer.

Methods. We performed a randomized, double-blind, placebo-controlled primary-prevention trial to determine whether daily supplementation with alpha-tocopherol, beta carotene, or both would reduce the incidence of tene than among those who did not (change in incidence, 18 percent; 95 percent confidence interval, 3 to 36 percent). We found no evidence of an interaction between alpha-tocopherol and beta carotene with respect to the incidence of lung cancer. Fewer cases of prostate cancer were diagnosed among those who received alpha-tocopherol than among those who did not. Beta carotene had little or no effect on the incidence of cancer other than lung cancer. Alpha-tocopherol had no apparent effect on total

NEJM 1994;330:1029-35

1994

The New England Journal of Medicine

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Volume 330 APRIL 14, 1994 Number 15

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NEJM 1994;330:1029-35

Beta-Carotin und Lungenkrebs

- 29.133 männliche Raucher aus Finnland
- 20 mg Beta-Carotin oder Placebo
  50 mg Vitamin E oder Vitamin E plus Beta-Carotin
- 5 bis 8 Jahre Studiendauer

NEJM 1994;330:1029-35

Zunahme statt Abnahme von Lungenkrebs

The New England Journal of Medicine

Volume 330 APRIL 14, 1994 Number 15

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NEJM 1994;330:1029-35

- Unter Beta-Carotin nimmt Lungenkrebs um 18% zu, die Sterberate um 8%.

Lungenkrebs

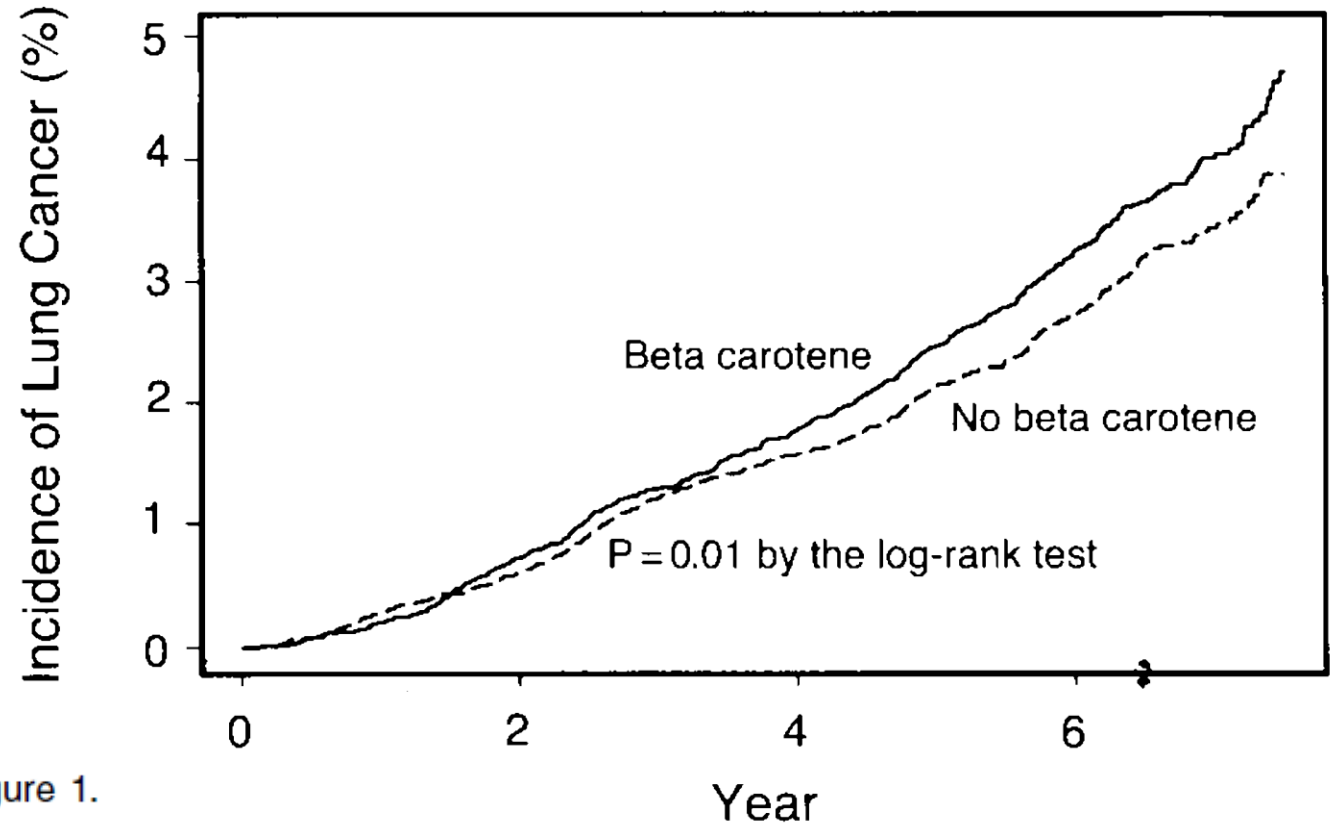

Figure 1.

NEJM 1994;330:1029-35

1996

EFFECTS OF A COMBINATION OF BETA CAROTENE AND VITAMIN A ON LUNG CANCER AND CARDIOVASCULAR DISEASE

GILBERT S. OMENN, M.D., PH.D., GARY E. GOODMAN, M.D., M.S., MARK D. THORNQUIST, PH.D., JOHN BALMES, M.D., MARK R. CULLEN, M.D., ANDREW GLASS, M.D., JAMES P. KEOGH, M.D., FRANK L. MEYSKENS, JR., M.D., BARBARA VALANIS, DR.P.H., JAMES H. WILLIAMS, JR., M.D., SCOTT BARNHART, M.D., M.P.H., AND SAMUEL HAMMAR, M.D.*

Abstract *Background.* Lung cancer and cardiovascular disease are major causes of death in the United States. It has been proposed that carotenoids and retinoids are agents that may prevent these disorders.

Methods. We conducted a multicenter, randomized, double-blind, placebo-controlled primary prevention trial — the Beta-Carotene and Retinol Efficacy Trial — involving a total of 18,314 smokers, former smokers, and workers exposed to asbestos. The effects of a combination of 30 mg of beta carotene per day and 25,000 IU of retinol (vitamin A) in the form of retinyl palmitate per day on the primary end point, the incidence of lung cancer, were compared with those of placebo compared with the placebo group. There were no statistically significant differences in the risks of other types of cancer. In the active-treatment group, the relative risk of death from any cause was 1.17 (95 percent confidence interval, 1.03 to 1.33); of death from lung cancer, 1.46 (95 percent confidence interval, 1.07 to 2.00); and of death from cardiovascular disease, 1.26 (95 percent confidence interval, 0.99 to 1.61). On the basis of these findings, the randomized trial was stopped 21 months earlier than planned; follow-up will continue for another 5 years.

Conclusions. After an average of four years of supplementation, the combination of beta carotene and vitamin A had no benefit and may have had an adverse effect

N Engl J Med 1996;334:1150-5.

Beta-Carotin und Vitamin A zur Prävention von Lungenkrebs

- 18.314 Raucher und Asbestarbeiter, USA
- 30 mg of Beta-Carotin und 25.000 IU Vitamin A pro Tag
- Vergleich zu Placebo
- Vorzeitiger Studienabbruch nach 4 Jahren

N Engl J Med 1996;334:1150-5.

Zunahme statt Abnahme von Lungenkrebs und Sterberaten

1150 THE NEW ENGLAND JOURNAL OF MEDICINE May 2, 1996

EFFECTS OF A COMBINATION OF BETA CAROTENE AND VITAMIN A ON LUNG CANCER AND

GILBERT S. OMENN, M.D., PH.D., GARY E. GOODMAN, M.D., M.S., MARK D. THORNQUIST, PH.D., JOHN BALMES, M.D., MARK R. CULLEN, M.D., ANDRE GLASS, M.D., JAMES P. KEOGH, M.D., SCOTT BARNHART, M.D., M.P.H., AND SAMUEL HAMMAR, M.D.

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Conclusions. After an average of four years of supplementation, the combination of beta carotene and vitamin A had no benefit and may have had an adverse effect

N Engl J Med 1996;334:1150-5.

- Unter Beta-Carotin und Vitamin A steigt die Lungenkrebsrate um 28%, die Lungenkrebs-Sterblichkeit um 46% und die Gesamttodesrate um 17%.

Lungenkrebs

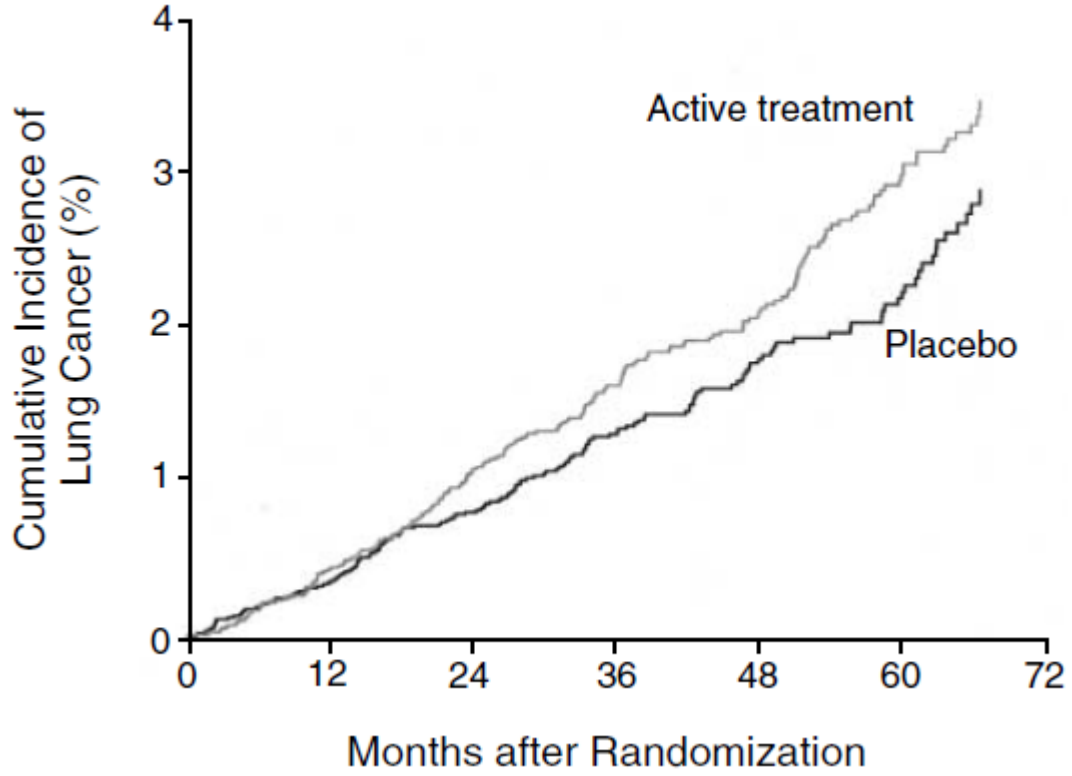

Figure 1.

N Engl J Med 1996;334:1150-5.

Sterberaten

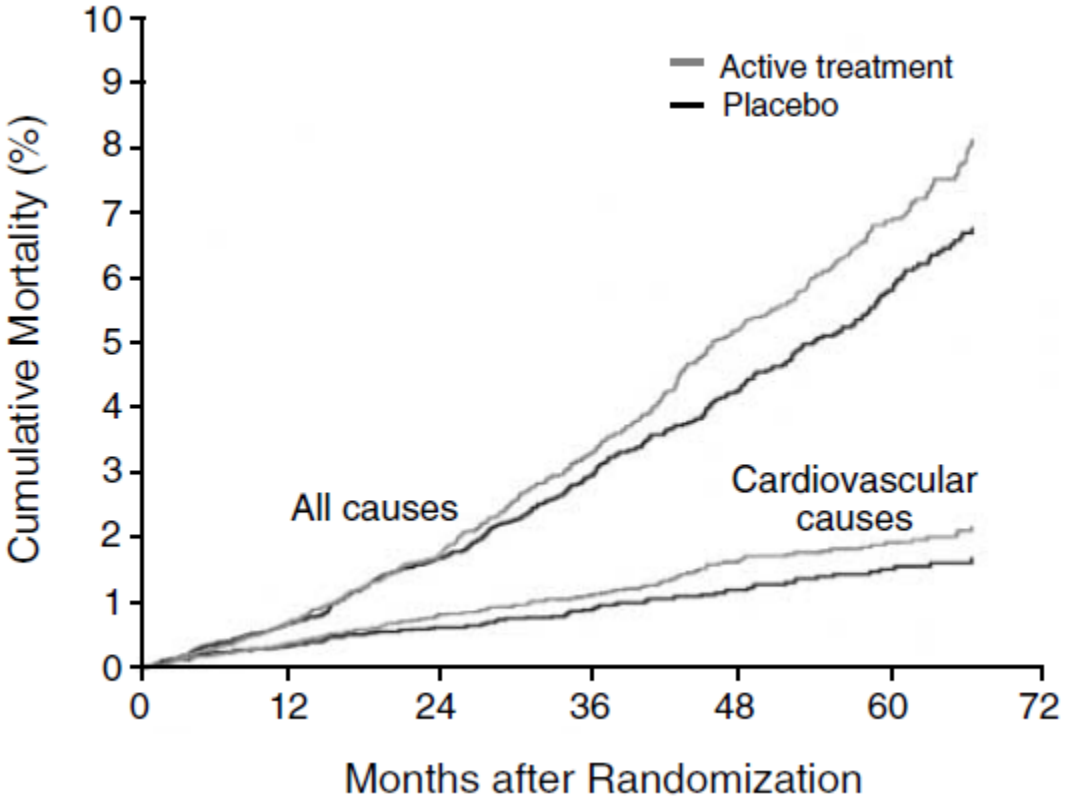

Figure 2.

N Engl J Med 1996;334:1150-5.

- Ein Schutz vor Herzleiden lässt sich ebenso wenig nachweisen: Das Risiko, als Raucher an Angina pectoris zu erkranken, scheint unter dem Provitamin eher zu steigen.

Vitamin A bei Masern

2011

Vitamin A for treating measles in children (Review)

Yang HM, Mao M, Wan C

Cochrane Database of Systematic Reviews 2011, Issue 7.

Vitamin A for treating measles in children (Review)

Authors‘ conclusions:

No overall significant reduction in mortality with vitamin A therapy for children with measles was found.

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Vitamin A

- Conflicting evidence in neonates and children in low income countries.

Vitamin E

2005

REVIEW

Meta-Analysis: High-Dosage Vitamin E Supplementation May Increase All-Cause Mortality

Edgar R. Miller III, MD, PhD; Roberto Pastor-Barriuso, PhD; Darshan Dalal, MD, MPH; Rudolph A. Riemersma, PhD, FRCPE; Lawrence J. Appel, MD, MPH; and Eliseo Guallar, MD, DrPH

Background: Experimental models and observational studies suggest that vitamin E supplementation may prevent cardiovascular disease and cancer. However, several trials of high-dosage vitamin E supplementation showed non–statistically significant increases in total mortality.

Purpose: To perform a meta-analysis of the dose–response relationship between vitamin E supplementation and total mortality by using data from randomized, controlled trials.

Patients: 135 967 participants in 19 clinical trials. Of these trials, 9 tested vitamin E alone and 10 tested vitamin E combined with other vitamins or minerals. The dosages of vitamin E ranged from

Data Synthesis: 9 of 11 trials testing high-dosage vitamin E (≥400 IU/d) showed increased risk (risk difference > 0) for all-cause mortality in comparisons of vitamin E versus control. The pooled all-cause mortality risk difference in high-dosage vitamin E trials was 39 per 10 000 persons (95% CI, 3 to 74 per 10 000 persons; $P = 0.035$). For low-dosage vitamin E trials, the risk difference was −16 per 10 000 persons (CI, −41 to 10 per 10 000 persons; $P > 0.2$). A dose–response analysis showed a statistically significant relationship between vitamin E dosage and all-cause mortality, with increased risk of dosages greater than 150 IU/d.

Limitations: High-dosage (≥400 IU/d) trials were often small

Ann Intern Med 2005; 142:37-46

Vitamin E und Alzheimer

2008

Vitamin E for Alzheimer's disease and mild cognitive impairment (Review)

Isaac MGEKN, Quinn R, Tabet N

The Cochrane Database of Systematic Reviews 2008

Vitamin E for Alzheimer's disease and mild cognitive impairment (Review)

Conclusions:

… There is no evidence of efficacy in the prevention or treatment …

THE COCHRANE COLLABORATION®

Antioxidantien bei Chemo- oder Strahlentherapie

2008

COMMENTARY

Should Supplemental Antioxidant Administration Be Avoided During Chemotherapy and Radiation Therapy?

Brian D. Lawenda, Kara M. Kelly, Elena J. Ladas, Stephen M. Sagar, Andrew Vickers, Jeffrey B. Blumberg

Despite nearly two decades of research investigating the use of dietary antioxidant supplementation during conventional chemotherapy and radiation therapy, controversy remains about the efficacy and safety of this complementary treatment. Several randomized clinical trials have demonstrated that the concurrent administration of antioxidants with chemotherapy or radiation therapy reduces treatment-related side effects. Some data indicate that antioxidants may protect tumor cells as well as healthy cells from oxidative damage generated by radiation therapy and some chemotherapeutic agents. However, other data suggest that antioxidants can protect normal tissues from chemotherapy- or radiation-induced damage without decreasing tumor control. We review some of the data regarding the putative benefits and potential risks of antioxidant supplementation concurrent with cytotoxic therapy. On the basis of our review of the published randomized clinical trials, we conclude that the use of supplemental antioxidants during chemotherapy and radiation therapy should be discouraged because of the possibility of tumor protection and reduced survival.

J Natl Cancer Inst 2008;100: 773 – 783

Conclusions:

… the use of supplemental antioxidants during chemotherapy and radiation therapy should be discouraged because of the **possibility of tumor protection and reduced survival**.

J Natl Cancer Inst 2008;100: 773 – 783

Antioxidantien bei Lebererkrankungen

2011

Antioxidant supplements for liver diseases (Review)

Bjelakovic G, Gluud LL, Nikolova D, Bjelakovic M, Nagorni A, Gluud C

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2011, Issue 3.

Antioxidant supplements for liver diseases (Review)

Conclusions:

... no evidence to support or refute antioxidant supplements in patients with liver disease. Antioxidant supplements **may increase liver enzyme activity**.

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2011, Issue 3.

Antioxidantien bei Zystischer Fibrose

2010

Antioxidant micronutrients for lung disease in cystic fibrosis (Review)

Shamseer L, Adams D, Brown N, Johnson JA, Vohra S

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2010, Issue 12.

Antioxidant micronutrients for lung disease in cystic fibrosis (Review)

Authors‘ conclusions:

… antioxidants appear to **decrease quality of life** and oxidative stress …

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2010, Issue 12.

Ist die „freie Radikale“ Theorie des Alterns falsch?

Free Radical Biology & Medicine 51 (2011) 327–336

Contents lists available at ScienceDirect

Free Radical Biology & Medicine

journal homepage: www.elsevier.com/locate/freeradbiomed

Review Article

Extending life span by increasing oxidative stress

Michael Ristow [a,b,*], Sebastian Schmeisser [a]

[a] Department of Human Nutrition, Institute of Nutrition, University of Jena, D-07743 Jena, Germany
[b] Department of Clinical Nutrition, German Institute of Human Nutrition Potsdam-Rehbruecke, D-14558 Nuthetal, Germany

ARTICLE INFO

Article history:
Received 6 February 2011
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ABSTRACT

Various nutritional, behavioral, and pharmacological interventions have been previously shown to extend life span in diverse model organisms, including *Saccharomyces cerevisiae*, *Caenorhabditis elegans*, *Drosophila melanogaster*, mice, and rats, as well as possibly monkeys and humans. This review aims to summarize

Free Radical Biology & Medicine 51 (2011) 327–336

Contents lists available at ScienceDirect

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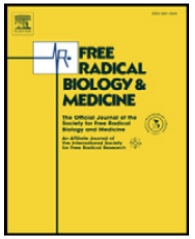

Review Article

Extending life span by increasing oxidative stress

Michael Ristow [a,b,*], Sebastian Schmeisser [a]

[a] Department of Human Nutrition, Institute of Nutrition, University of Jena, D-07743 Jena, Germany
[b] Department of Clinical Nutrition, German Institute of Human Nutrition Potsdam-Rehbrücke, D-14558 Nuthetal, Germany

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Various nutritional, behavioral, and pharmacological interventions have been previously shown to extend life span in diverse model organisms, including *Saccharomyces cerevisiae, Caenorhabditis elegans, Drosophila melanogaster*, mice, and rats, as well as possibly monkeys and humans. This review aims to summarize

Free Radical Biology & Medicine 51 (2011) 327–336

Folsäure und Vitamin B12

Folsäure und Vitamin B12

Herzkreislauferkrankungen

Plausibilität

- Beobachtungsstudien zeigen eine Assoziation zwischen Homocysteinspiegel und Risiko für kardiovaskuläre Krankheiten.
- Orale Verabreichung von Folsäure und Vitamin B12 kann den Plasmaspiegel des Gesamt-Homocysteins senken.

JAMA. 2008;300(7):795-804

2008

L CONTRIBUTION

Mortality and Cardiovascular Events in Patients Treated With Homocysteine-Lowering B Vitamins After Coronary Angiography

A Randomized Controlled Trial

Marta Ebbing, MD
Øyvind Bleie, MD, PhD
Per Magne Ueland, MD, PhD
Jan Erik Nordrehaug, MD, PhD
Dennis W. Nilsen, MD, PhD
Stein Emil Vollset, MD, DrPH

Context Observational studies have reported associations between circulating total homocysteine concentration and risk of cardiovascular disease. Oral administration of folic acid and vitamin B_{12} can lower plasma total homocysteine levels.

Objective To assess the effect of treatment with folic acid and vitamin B_{12} and the effect of treatment with vitamin B_6 as secondary prevention in patients with coronary artery disease or aortic valve stenosis.

Design, Setting, and Participants Randomized, double-blind controlled trial con-

JAMA. 2008;300(7):795-804

Intervention:

Folsäure 0,8 mg plus Vitamin B12 0,4 mg plus Vitamin B6 40 mg pro Tag;

Folsäure plus Vitamin B12;

Vitamin B6;

Placebo

JAMA. 2008;300(7):795-804

ORIGINAL CONTRIBUTION

Schlussfolgerungen:

… kein Effekt von Folsäure, Vitamin B12 oder Vitamin B6 auf kardiovaskuläre Erkrankungen oder Sterberaten …

folic acid and vitamin B_{12} can lower plasma total homocysteine levels.

Objective To assess the effect of treatment with folic acid and vitamin B_{12} and the effect of treatment with vitamin B_6 as secondary prevention in patients with coronary artery disease or aortic valve stenosis.

Design, Setting, and Participants Randomized, double-blind controlled trial con-

JAMA. 2008;300(7):795-804

Höhere Dosierung nötig?

ORIGINAL CONTRIBUTION

Mortality and Cardiovascular Events in Patients Treated With Homocysteine-Lowering B Vitamins After Coronary Angiography

A Randomized Controlled Trial

Marta Ebbing, MD
Oyvind Bleie, MD, PhD
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Design, Setting, and Participants Randomized, double-blind controlled trial con-

JAMA. 2008;300(7):795-804

2010 INAL CONTRIBUTION

Effects of Homocysteine-Lowering With Folic Acid Plus Vitamin B_{12} vs Placebo on Mortality and Major Morbidity in Myocardial Infarction Survivors

A Randomized Trial

Study of the Effectiveness of Additional Reductions in Cholesterol and Homocysteine (SEARCH) Collaborative Group*

Context Blood homocysteine levels are positively associated with cardiovascular disease, but it is uncertain whether the association is causal.

Objective To assess the effects of reducing homocysteine levels with folic acid and vitamin B_{12} on vascular and nonvascular outcomes.

Design, Setting, and Patients Double-blind randomized controlled trial of 12 064 survivors of myocardial infarction in secondary care hospitals in the United Kingdom between 1998 and 2008

OBSERVATIONAL STUDIES have consistently indi-

JAMA. 2010;303(24):2486-2494

12.064 Patienten nach Herzinfarkt
United Kingdom, 1998-2008

JAMA. 2010;303(24):2486-2494

Intervention:

Folsäure 2 mg plus Vitamin B12 1 mg pro Tag;

Placebo

JAMA. 2010;303(24):2486-2494

Schlussfolgerungen:

Trotz anhaltender und substantieller Senkung des Homocysteinspiegels kein positiver Effekt auf vaskuläre Ereignisse

JAMA. 2010;303(24):2486-2494

Vitamin B

Nierenerkrankungen

2010

Vascular Medicine

B Vitamins and the Risk of Total Mortality and Cardiovascular Disease in End-Stage Renal Disease

Results of a Randomized Controlled Trial

Judith Heinz, MSc; Siegfried Kropf, PhD; Ute Domröse, MD; Sabine Westphal, MD; Katrin Borucki, MD; Claus Luley, MD; Klaus H. Neumann, MD; Jutta Dierkes, PhD

Background—In observational studies, hyperhomocysteinemia has been found to be a risk factor for total mortality and cardiovascular events in patients with end-stage renal disease. These patients have grossly elevated homocysteine levels that can be lowered by supplementation with folic acid and vitamin B_{12}. We conducted a randomized clinical trial with B vitamins to reduce homocysteine levels and therefore cardiovascular events and total mortality.

Methods and Results—This randomized, double-blind multicenter study was conducted in 33 dialysis centers in north and east Germany between July 2002 and July 2008. We randomly assigned 650 patients with end-stage renal disease who were undergoing hemodialysis to 2 postdialysis treatments: 5 mg folic acid, 50 μg vitamin B_{12}, and 20 mg vitamin B_6 (active treatment) or 0.2 mg folic acid, 4 μg vitamin B_{12}, and 1.0 mg vitamin B_6 (placebo) given 3 times per week for an average of 2 years. The primary outcome was total mortality; the secondary outcome was fatal and nonfatal cardiovascular events. The primary outcome occurred in 102 patients (31%) receiving the active treatment and in 92 (28%) receiving placebo (hazard ratio, 1.13; 95% confidence interval, 0.85 to 1.50; P=0.51). The secondary outcome occurred in 83 patients (25%) receiving the active treatment and in 98 (30%) receiving placebo (hazard ratio, 0.80; 95% confidence interval, 0.60 to 1.07; P=0.13).

Conclusions—Increased intake of folic acid, vitamin B_{12}, and vitamin B_6 did not reduce total mortality and had no significant effect on the risk of cardiovascular events in patients with end-stage renal disease.

Clinical Trial Registration—URL: www.anzctr.org.au. Unique identifier: ACTRN12609000911291. URL: www.cochrane-renal.org. Unique identifier: CRG010600027.

(*Circulation*. 2010;121:1432-1438.)

B Vitamins and the Risk of Total Mortality and

Schlussfolgerungen:

… kein positiver Effekt auf vaskuläre Ereignisse oder Sterberaten …

cardiovascular events. The primary outcome occurred in 102 patients (31%) receiving the active treatment and in 92 (28%) receiving placebo (hazard ratio, 1.13; 95% confidence interval, 0.85 to 1.50; $P=0.51$). The secondary outcome occurred in 83 patients (25%) receiving the active treatment and in 98 (30%) receiving placebo (hazard ratio, 0.80; 95% confidence interval, 0.60 to 1.07; $P=0.13$).

Conclusions—Increased intake of folic acid, vitamin B_{12}, and vitamin B_6 did not reduce total mortality and had no significant effect on the risk of cardiovascular events in patients with end-stage renal disease.

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(*Circulation*. 2010;121:1432-1438.)

Höhere Dosierung nötig?

2010

NAL CONTRIBUTION

Effect of B-Vitamin Therapy on Progression of Diabetic Nephropathy

A Randomized Controlled Trial

Andrew A. House, MD
Misha Eliasziw, PhD
Daniel C. Cattran, MD
David N. Churchill, MD
Matthew J. Oliver, MD
Adrian Fine, MD
George K. Dresser, MD

Context Hyperhomocysteinemia is frequently observed in patients with diabetic nephropathy. B-vitamin therapy (folic acid, vitamin B_6, and vitamin B_{12}) has been shown to lower the plasma concentration of homocysteine.

Objective To determine whether B-vitamin therapy can slow progression of diabetic nephropathy and prevent vascular complications.

Design, Setting, and Participants A multicenter, randomized, double-blind, placebo-controlled trial (Diabetic Intervention with Vitamins to Improve Nephropathy [DIVINe]) at 5 university medical centers in Canada conducted between May 2001 and July 2007 of 238 participants who had type 1 or 2 diabetes and a clinical diagnosis of diabetic

JAMA. 2010;303(16):1603-1609

ORIGINAL CONTRIBUTION

Intervention:

Folsäure 2,5 mg plus Vitamin B12 1 mg plus Vitamin B6 25 mg pro Tag;

Placebo

Matthew J. Oliver, MD

Adrian Fine, MD

George K. Dresser, MD

betic nephropathy and prevent vascular complications.

Design, Setting, and Participants A multicenter, randomized, double-blind, placebo-controlled trial (Diabetic Intervention with Vitamins to Improve Nephropathy [DIVINe]) at 5 university medical centers in Canada conducted between May 2001 and July 2007 of 238 participants who had type 1 or 2 diabetes and a clinical diagnosis of diabetic

JAMA. 2010;303(16):1603-1609

Verschlechterung der Nierenfunktion und Zunahme statt Abnahme von Herzkreislaufkomplikationen

JAMA. 2010;303(16):1603-1609

Folsäure

Darmpolypen

ORIGINAL CONTRIBUTION

Folic Acid for the Prevention of Colorectal Adenomas

A Randomized Clinical Trial

Bernard F. Cole, PhD
John A. Baron, MD
Robert S. Sandler, MD
Robert W. Haile, DrPh
Dennis J. Ahnen, MD
Robert S. Bresalier, MD
Gail McKeown-Eyssen, PhD
Robert W. Summers, MD

Context Laboratory and epidemiological data suggest that folic acid may have an antineoplastic effect in the large intestine.

Objective To assess the safety and efficacy of folic acid supplementation for preventing colorectal adenomas.

Design, Setting, and Participants A double-blind, placebo-controlled, 2-factor, phase 3, randomized clinical trial conducted at 9 clinical centers between July 6, 1994, and October 1, 2004. Participants included 1021 men and women with a recent history of colorectal adenomas and no previous invasive large intestine carcinoma.

Intervention Participants were randomly assigned in a 1:1 ratio to receive 1 mg/d of folic acid (n=516) or placebo (n=505), and were separately randomized to receive

JAMA. 2007;297:2351-2359

Schlussfolgerungen:

… kein präventiver Effekt … **möglicherweise Zunahme von kolorektalen Neoplasien** …

JAMA. 2007;297:2351-2359

Meta-Analysen

Folsäure, Vitamin B

2010

REVIEW ARTICLE

LESS IS MORE

Effects of Lowering Homocysteine Levels With B Vitamins on Cardiovascular Disease, Cancer, and Cause-Specific Mortality

Meta-analysis of 8 Randomized Trials Involving 37 485 Individuals

Robert Clarke, FRCP; Jim Halsey, BSc; Sarah Lewington, DPhil; Eva Lonn, MD; Jane Armitage, FRCP; JoAnn E. Manson, MD, DrPH; Kaare H. Bønaa, MD; J. David Spence, MD; Ottar Nygård, MD; Rex Jamison, MD; J. Michael Gaziano, MD; Peter Guarino, PhD; Derrick Bennett, PhD; Fraz Mir, MD; Richard Peto, FRS; Rory Collins, FRCP; for the B-Vitamin Treatment Trialists' Collaboration

Elevated plasma homocysteine levels have been associated with higher risks of cardiovascular disease, but the effects on disease rates of supplementation with folic acid to lower plasma homocysteine levels are uncertain. Individual participant data were obtained for a meta-analysis of 8 large, randomized, placebo-controlled trials of folic acid supplementation involving 37 485 individuals at increased risk of cardiovascular disease. The analy-

Arch Intern Med. 2010;170(18):1622-1631

REVIEW ARTICLE

LESS IS MORE

Effects of Lowering Homocysteine Levels

Schlussfolgerungen:

… kein Effekt auf Gesamtsterblichkeit, Herzkreislaufkomplikationen oder Krebserkrankungen …

lower plasma homocysteine levels are uncertain. Individual participant data were obtained for a meta-analysis of 8 large, randomized, placebo-controlled trials of folic acid supplementation involving 37 485 individuals at increased risk of cardiovascular disease. The analy-

Arch Intern Med. 2010;170(18):1622-1631

Vitamin D

Infektionskrankheiten

Vitamin D

Prävention von Lungenentzündung bei Kindern

2012

Articles

Effect on the incidence of pneumonia of vitamin D supplementation by quarterly bolus dose to infants in Kabul: a randomised controlled superiority trial

Semira Manaseki-Holland, Zabihullah Maroof, Jane Bruce, M Zulf Mughal, Mohammad Isaq Masher, Zulfiqar A Bhutta, Gijs Walraven, Daniel Chandramohan

Summary

Background Vitamin D has a role in regulating immune function, and its deficiency is a suggested risk factor for childhood pneumonia. Our aim was to assess whether oral supplementation of vitamin D_3 (cholecalciferol) will reduce the incidence and severity of pneumonia in a high-risk infant population.

Methods We did a randomised placebo-controlled trial to compare oral 100 000 IU (2·5 mg) vitamin D_3 with placebo given to children aged 1–11 months in Kabul, Afghanistan. Randomisation was by use of a computer-generated list.

Lancet 2012; 379: 1419–27

Published Online
April 10, 2012
DOI:10.1016/S0140-6736(11)61650-4

See Comment page 1373

Lancet 2012; 379: 1419–27

2012

Schlussfolgerungen:

… keine Reduktion des Erstauftretens von Lungenentzündung …

Lancet 2012; 379: 1419–27

2012

Articles

Schlussfolgerungen:

… keine Reduktion des Erstauftretens von Lungenentzündung …

… **mehrfache Lungenentzündungen häufiger unter Vitamin D Behandlung** …

Lancet 2012; 379: 1419–27

Vitamin D

Prävention von Darmkrebs

2011

Annals of Internal Medicine

Review

Vitamin D With or Without Calcium Supplementation for Prevention of Cancer and Fractures: An Updated Meta-analysis for the U.S. Preventive Services Task Force

Mei Chung, PhD, MPH; Jounghee Lee, PhD; Teruhiko Terasawa, MD, PhD; Joseph Lau, MD; and Thomas A. Trikalinos, MD, PhD

Background: Studies suggest that vitamin D supplementation may reduce cancer and fracture risks.

Purpose: To examine the benefits and harms of vitamin D with or without calcium supplementation on clinical outcomes of cancer and fractures in adults.

Data Sources: English-language studies identified from MEDLINE and the Cochrane Central Register of Controlled Trials through July 2011.

Study Selection: Randomized, controlled trials (RCTs), prospective

in blood 25-(OH)D concentration was associated with a 6% (95% CI, 3% to 9%) reduced risk for colorectal cancer but no statistically significant dose–response relationships for prostate and breast cancer. Random-effects model meta-analysis showed that combined vitamin D and calcium supplementation reduced fracture risk (pooled relative risk, 0.88 [CI, 0.78 to 0.99]) in older adults, but the effects differed according to study setting: institution (relative risk, 0.71 [CI, 0.57 to 0.89]) versus community-dwelling (relative risk, 0.89 [CI, 0.76 to 1.04]). One RCT showed adverse outcomes associated with supplementation, including increased risk for renal and urinary tract stones.

Primary Funding Source: Agency for Healthcare Research and Quality.

Ann Intern Med. 2011;155:827-838.

www.annals.org

Annals of Internal Medicine

Schlussfolgerungen:

Die Evidenz ist nicht ausreichend zur Beurteilung von Nutzen und Schaden von Vitamin D Supplementen zur Krebsprävention.

Primary Funding Source: Agency for Healthcare Research and Quality.

Ann Intern Med. 2011;155:827-838.

www.annals.org

Vitamin D

Stürze

2011
ENDOCRINOLOGY & METABOLISM

SPECIAL FEATURE

Clinical Review

The Effect of Vitamin D on Falls: A Systematic Review and Meta-Analysis

Mohammad Hassan Murad, Khalid B. Elamin, Nisrin O. Abu Elnour, Mohamed B. Elamin, Aziz A. Alkatib, Mitra M. Fatourechi, Jaime P. Almandoz, Rebecca J. Mullan, Melanie A. Lane, Hau Liu, Patricia J. Erwin, Donald D. Hensrud, and Victor M. Montori

Knowledge and Encounter Research Unit (M.H.M., N.O.A.E., M.B.E., A.A.A., M.M.F., J.P.A., R.J.M., M.A.L., P.J.E., V.M.M.), and Division of Preventive, Occupational, and Aerospace Medicine (M.H.M., D.D.H.), Mayo Clinic, Rochester, Minnesota 55905; Department of Medicine (K.B.E.), Case Western Reserve University, Metrohealth Medical Center, Cleveland, Ohio 44109; Division of Endocrinology, Diabetes, Metabolism, and Nutrition (V.M.M.), Mayo Clinic, Rochester, Minnesota 55905; and Division of Endocrinology and Metabolism (H.L.), Santa Clara Valley Medical Center, San Jose, California 95128

Context: Vitamin D affects bone and muscle health and likely reduces the risk of falls in the elderly.

Objective: The aim of this systematic review is to summarize the existing evidence on vitamin D use

Murad M H et al. JCEM 2011;96:2997-3006

- **Conclusions:** Vitamin D combined with calcium reduces the risk of falls. The reduction in studies without calcium co-administration did not reach statistical significance. The majority of the evidence is derived from trials enrolling elderly women.

Vitamin D

Knochenbrüche

Annual High-Dose Oral Vitamin D and Falls and Fractures in Older Women

A Randomized Controlled Trial

Kerrie M. Sanders, PhD
Amanda L. Stuart, BappSc
Elizabeth J. Williamson, MA, PhD
Julie A. Simpson, PhD
Mark A. Kotowicz, MBBS, FRACP
Doris Young, MD, MBBS, FRACGP

Context Improving vitamin D status may be an important modifiable risk factor to reduce falls and fractures; however, adherence to daily supplementation is typically poor.

Objective To determine whether a single annual dose of 500 000 IU of cholecalciferol administered orally to older women in autumn or winter would improve adherence and reduce the risk of falls and fracture.

Design, Setting, and Participants A double-blind, placebo-controlled trial of 2256 community-dwelling women, aged 70 years or older, considered to be at high risk of

JAMA. 2010;303(18):1815-1822

Zunahme statt Abnahme von Stürzen und Frakturen

ORIGINAL CONTRIBUTION

Annual High-Dose Oral Vitamin D and Falls and Fractures in Older Women

A Randomized Controlled Trial

Kerrie M. Sanders, PhD
Amanda L. Stuart, BappSc
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JAMA. 2010;303(18):1815-1822

Meta-Analysen

Vitamin D

2010

BMJ

RESEARCH

Patient level pooled analysis of 68 500 patients from seven major vitamin D fracture trials in US and Europe

The DIPART (vitamin D Individual Patient Analysis of Randomized Trials) Group

Correspondence to: B Abrahamsen, Department of Internal Medicine and Endocrinology, Copenhagen University Hospital Gentofte, Niels Andersensvej 65, DK-2900 Hellerup, Denmark
b.abrahamsen@physician.dk

Cite this as: *BMJ* 2010;340:b5463

ABSTRACT

Objectives To identify participants' characteristics that influence the anti-fracture efficacy of vitamin D or vitamin D plus calcium with respect to any fracture, hip fracture, and clinical vertebral fracture and to assess the influence of dosing regimens and co-administration of calcium.

Design Individual patient data analysis using pooled data

particularly in residential and care homes. This may contribute to secondary hyperparathyroidism, bone loss, impaired neuromuscular function, and an increased risk of falls and fractures.[5-8] This provides the rationale for using vitamin D to prevent fractures in older people.

A large randomised controlled trial in women in

Schlussfolgerungen:

… Vitamin D alleine verhindert keine Frakturen.
Calcium in Kombination mit Vitamin D reduziert Frakturen …

BMJ 2010;340:b5463

2011

Annals of Internal Medicine

Review

Vitamin D With or Without Calcium Supplementation for Prevention of Cancer and Fractures: An Updated Meta-analysis for the U.S. Preventive Services Task Force

Mei Chung, PhD, MPH; Jounghee Lee, PhD; Teruhiko Terasawa, MD, PhD; Joseph Lau, MD; and Thomas A. Trikalinos, MD, PhD

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Purpose: To examine the benefits and harms of vitamin D with or without calcium supplementation on clinical outcomes of cancer and fractures in adults.

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Study Selection: Randomized, controlled trials (RCTs), prospective

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Primary Funding Source: Agency for Healthcare Research and Quality.

Ann Intern Med. 2011;155:827-838.

www.annals.org

Ergebnisse:

Vitamin D in Kombination mit Calcium kann Frakturen reduzieren. Kein Effekt bei Vitamin D alleine.

Effekte vor allem bei Altenheimbewohnern.

Optimale Dosierung und Behandlungsverfahren bleiben unklar.

Das Risiko für Nieren- und Harnleitersteine nimmt zu.

Calcium

Kardiovaskuläre Komplikationen

Meta-Analyse

Calcium

BMJ

RESEARCH

Effect of calcium supplements on risk of myocardial infarction and cardiovascular events: meta-analysis

Mark J Bolland, senior research fellow,[1] Alison Avenell, clinical senior lecturer,[2] John A Baron, professor,[3] Andrew Grey, associate professor,[1] Graeme S MacLennan, senior research fellow,[2] Greg D Gamble, research fellow,[1] Ian R Reid, professor[1]

[1]Department of Medicine, Faculty of Medical and Health Sciences, University of Auckland, Private Bag 92 019, Auckland 1142, New Zealand

ABSTRACT

Objective To investigate whether calcium supplements increase the risk of cardiovascular events.

Design Patient level and trial level meta-analyses.

INTRODUCTION

Osteoporosis is a major cause of morbidity and mortality in older people.[1] Calcium supplements marginally reduce the risk of fracture,[2 3] and most guidelines

BMJ 2010;341:c3691

Conclusions:
Calcium supplements (without coadministered vitamin D) are associated with an **increased risk of myocardial infarction** …

BMJ 2010;341:c3691

2011

Vitamin D supplementation for prevention of mortality in adults (Review)

Bjelakovic G, Gluud LL, Nikolova D, Whitfield K, Wetterslev J, Simonetti RG, Bjelakovic M, Gluud C

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2011, Issue 7.

Vitamin D supplementation for prevention of mortality in

- 50 randomisiert-kontrollierte Studien
  94.148 Studienteilnehmer, meist ältere Frauen
  Behandlungsdauer durchschnittlich 2 Jahre

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2011, Issue 7.

Vitamin D supplementation for prevention of mortality in

- Relatives Risiko 0,97 (95% CI 0,94-1,00)

Bj M,

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2011, Issue 7.

Vitamin D supplementation for prevention of mortality in

- Vitamin D alleine hat keinen Einfluss auf die Mortalität.

Bj M,

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2011, Issue 7.

Vitamin D supplementation for prevention of mortality in

- Kein Effekt auf Krebserkrankungen

Bj M,

THE COCHRANE COLLABORATION®

Cochrane Database of Systematic Reviews 2011, Issue 7.

Multivitamine zur Prävention von Krebs und Herzkreislauf-Erkrankungen bei Frauen

2009

ORIGINAL INVESTIGATION

Multivitamin Use and Risk of Cancer and Cardiovascular Disease in the Women's Health Initiative Cohorts

Marian L. Neuhouser, PhD; Sylvia Wassertheil-Smoller, PhD; Cynthia Thomson, PhD, RD; Aaron Aragaki, MS; Garnet L. Anderson, PhD; JoAnn E. Manson, MD, DrPH; Ruth E. Patterson, PhD; Thomas E. Rohan, MD, PhD; Linda van Horn, MD, PhD; James M. Shikany, DrPH; Asha Thomas, PhD; Andrea LaCroix, PhD; Ross L. Prentice, PhD

Background: Millions of postmenopausal women use multivitamins, often believing that supplements prevent chronic diseases such as cancer and cardiovascular disease (CVD). Therefore, we decided to examine associations between multivitamin use and risk of cancer, CVD, and mortality in postmenopausal women.

Methods: The study included 161 808 participants from the Women's Health Initiative clinical trials (N=68 132 in 3 overlapping trials of hormone therapy, dietary modification, bladder, stomach, lung, or ovarian cancer; 8751 CVD events; and 9865 deaths were reported. Multivariate-adjusted analyses revealed no association of multivitamin use with risk of cancer (hazard ratio [HR], 0.98, and 95% confidence interval [CI], 0.91-1.05 for breast cancer; HR, 0.99, and 95% CI, 0.88-1.11 for colorectal cancer; HR, 1.05, and 95% CI, 0.90-1.21 for endometrial cancer; HR, 1.0, and 95% CI, 0.88-1.13 for lung cancer; and HR, 1.07, and 95% CI, 0.88-1.29 for ovarian cancer); CVD (HR, 0.96, and 95%

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ORIGINAL INVESTIGATION

Frauengesundheitsstudie (WHI Studie), USA

- 162.000 postmenopausale Frauen
- 8 Jahre Studiendauer

Arch Intern Med. 2009;169(3):294-304

ORIGINAL INVESTIGATION

Conclusions:

… the study provided convincing evidence that multivitamin use has little or no influence on the risk of common cancers, CVD, or total mortality in postmenopausal women.

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Fazit

- Es gibt wenige medizinische Maßnahmen, die so umfassend untersucht wurden wie die Supplementierung mit Vitaminen.

Fazit

- Die Supplementierung mit Vitaminen hat ein erhebliches Schadenspotenzial.
- Raucher und Menschen mit bereits bestehenden Erkrankungen scheinen besonders vulnerabel.
- Ein Nutzen ist selten nachweisbar.
- Vitaminspiegel sind nicht geeignet zur Beurteilung des Nutzens.

Die gute Nachricht

Die gute Nachricht

- We can do without it!