

THE LANCET Diabetes & Endocrinology

Volume 2 · Issue 4 · April 2014

www.thelancet.com/diabetes-endocrinology



Comment

Understanding diabetes and tuberculosis

See page 270

Articles

Skeletal, vascular, and cancer outcomes with vitamin D supplementation

See page 307

Personal View

Stress hyperlactataemia

See page 339

The Lancet Diabetes & Endocrinology

32 Jamestown Road,
London NW11 7BY, UK
T +44 (0)20 7424 4296
F +44 (0)1865 853021

The Lancet—New York
360 Park Avenue South,
New York, NY 10010-1710, USA
T +1 212 633 3810
F +1 212 633 3853

The Lancet—Beijing
Unit 1-6, 7F, Tower W1, Oriental
Plaza, Beijing 100738 China
T +86 10 85208872
F +86 10 85189297
diabetes-endocrinology@lancet.com

Editor

Justine Davies

Deputy Editor

Sarah Allan

Senior Editor

Fiona Mitchell

Managing Editor

Hannah Jones

Senior Deputy Managing Editor

Laura Benham

Deputy Managing Editor

Tim Dehnell

Senior Assistant Editors

Olaya Astudillo

Abi Cantor

Sean Cleghorn

Dara Mohammadi

Zena Nyakoojo

Helen Penny

Onisiforos Sekkidis

Priya Venkatesan

Francis Whinder

Farhat Yaqub

Assistant Editors

Neil Bennet

Hannah Cagney

Stephanie Clague

Katherine Gourd

Natalie Harrison

Rebecca Heald

Louise Rishon

Web Editors

Nicolai Humphreys

Richard Lane

Erika Niesner

Senior Assistant Web Editor

Katherine Rolfe

North America Editor

Rebecca Cooney (New York)

Asia Editor

Helena Hui Wang (Beijing)

Conference Editor

Laura Hart

Media Relations Manager

Daisy Barton

Publisher/Editorial Director

Richard Horton

THE LANCET® is a registered

trademark of Reed Elsevier

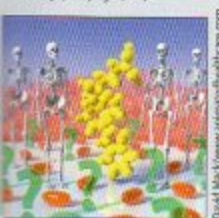
Properties SA, used under licence.

Edition

ROW

Cover

Vitamin, health outcomes, and
mortality (see page 307)



Editorial

- 263 Obesity prevention in Latin America: now is the time

Comment

- 264 Are glycated serum proteins ready for prime time?

R M Cohen, W H Herman

- 266 GLP-1 receptor agonists: why is once weekly inferior to once daily?

A J Garber

- 267 Vitamin D and prevention of diabetes: is lifelong endogenous vitamin D needed?

S Pilz and others

- 269 The puzzling world of vitamin D insufficiency

K Michaëlsson

- 270 TANDEM: understanding diabetes and tuberculosis

R van Crevel, H M Dockrel

- e6 Diabetes: a challenge for China in the 21st century

W Jia

Correspondence

- 273 Vitamin D status and ill health

E Giovannucci; M F Holick, W B Grant; D Naughton, A Petroczi; P Autier and others

- e8 Vitamin D status and ill health

M Feelsch and others; H M Macdonald and others; N C Harvey, C Cooper; J García de Tena and others; C F Garland and others

In Focus

- 277 Research in brief

S Kang

- 278 Profile

Avi Friedman: designs on a healthy future

A Pirsi

Corrections

- e11 Correction to *Lancet Diabetes Endocrinol* 2013; published online July 30

- e11 Correction to *Lancet Diabetes Endocrinol* 2014; 2: 19–29

Peer reviewed and fast-tracked to publication in 4–8 weeks

See www.thelancet.com for supplementary material

See www.thelancet.com for podcast

Version verified by CrossMark

Open Access article

For e-pages go to www.thelancet.com/diabetes-endocrinology

Articles

- 279 Fructosamine and glycated albumin for risk stratification and prediction of incident diabetes and microvascular complications: a prospective cohort analysis of the Atherosclerosis Risk in Communities (ARIC) study

E Selvin and others

- 289 Once-weekly albiglutide versus once-daily liraglutide in patients with type 2 diabetes inadequately controlled on oral drugs (HARMONY 7): a randomised, open-label, multicentre, non-inferiority phase 3 study

R E Pratley and others

- 298 Vitamin D concentration, obesity, and risk of diabetes: a mendelian randomisation study

S Afzal and others

- 307 The effect of vitamin D supplementation on skeletal, vascular, or cancer outcomes: a trial sequential meta-analysis

M J Bolland and others

Review

- 321 Childhood and adolescent overweight and obesity in Latin America: a systematic review

J Á Rivera and others

- 333 Turner's syndrome: challenges of late diagnosis

M Cheng Lee, G S Conway

Personal View

- 339 Stress hyperlactataemia: present understanding and controversy

M Garcia-Alvarez and others

Clinical Picture

- 348 Follicular thyroid carcinoma presenting as a soft tissue thigh mass

J Olejarski and others

International Advisory Board

Clifford Bailey (UK)

Ariel Barkan (USA)

Anthony H Barnett (UK)

Richard Bergenstal (USA)

John Buse (USA)

Francesco Chiarelli (Italy)

Miriam Cnop (Belgium)

Annamaria Colao (Italy)

Cynus Cooper (UK)

David S Cooper (USA)

Andrea Dunaif (USA)

Stephen Franks (UK)

Gema Frühbeck (Spain)

Edwin Gale (UK)

Hertzel C Gerstein (Canada)

Lorenz C Hofbauer (Germany)

Frank B Hu (USA)

William J Jeffcoate (UK)

Weiping Jia (China)

Ursula B Kaiser (USA)

Graham Leese (UK)

Mikael Knip (Finland)

Robert T Lindsay (USA)

Glenn Mattin (USA)

Jean Claude Mbanya (Cameroon)

David M Nathan (USA)

Michael Nauck (Germany)

Stephanie Page (USA)

Elizabeth Pearce (USA)

Marija Pfeifer (Slovenia)

Barry Popkin (USA)

Richard E Pratley (USA)

Guy Rutten (Netherlands)

Naveed Sattar (UK)

Martin J Schlumberger (France)

Paul M Stewart (UK)

Cesar G Victora (Brazil)

Thao J Visser (Netherlands)

Paul Zimmet (Australia)

Bernard Zinman (Canada)

Information for Authors

See www.thelancet.com/lancet-diabetes-endocrinology-information-for-authors

Ombudsman

Charles Warlow (c/o The Lancet or ombudsman@lancet.com)

risk of fractures and falls.¹⁰ Some think that the use of these high intermittent doses are not physiological and therefore the results from these studies are claimed not to be compelling.¹⁰ The debate is likely to continue and trials with high daily doses are ongoing.

Nevertheless, existing evidence does not lend support to the commonly held belief that vitamin D supplementation in general prevents osteoporosis, fractures, and non-skeletal diseases. Consequently, the impression that vitamin D is a sunshine vitamin and that increasing doses lead to improved health is far from clear.¹ Without stringent indications—ie supplementing those without true insufficiency—there is a legitimate fear that vitamin D supplementation might actually cause net harm.^{5,10} A report from the Institute of Medicine³ also emphasized that there might be risks from both low and high concentrations of vitamin D and that there might be a U-shaped curve of risk, as has been noted with other vitamin supplements.³ Until more information is available, it would be prudent to choose a cautious approach to vitamin D supplementation and to put more emphasis on the development of evidence-based cutoff points for vitamin D inadequacy.

Karl Michaëlsson

Department of Surgical Sciences, Uppsala University,
751 85 Uppsala, Sweden
karl.michaelsson@surgsci.uu.se

I declare that I have no conflicts of interest.

- Holick MF. Vitamin D deficiency. *NEJM* 2007; **357**: 266–81.
- Christakos S, Seth T, Hirsch J, Porta A, Moulas A, Dhawan P. Vitamin D biology revealed through the study of knockout and transgenic mouse models. *Annu Rev Nutr* 2013; **33**: 71–85.
- Ross AC, Manson JE, Abrams SA, et al. The 2011 report on dietary reference intakes for calcium and vitamin D from the institute of medicine: what clinicians need to know. *J Clin Endocrinol Metab*; **96**: 53–58.
- Garland CF, Gorham ED, Mohr SB, Garland FC. Vitamin D for cancer prevention: global perspective. *Ann Epidemiol* 2009; **19**: 468–83.
- Michaëlsson K, Baron JA, Snellman G, et al. Plasma vitamin D and mortality in older men: a community-based prospective cohort study. *Am J Clin Nutr* 2010; **92**: 841–48.
- Powe CE, Evans MK, Wenger J, et al. Vitamin D-binding protein and vitamin D status of black Americans and white Americans. *NEJM* 2013; **369**: 1991–2000.
- Malm OJ. Calcium requirement and adaptation in adult men. *Scand J Clin Lab Invest* 1958; **10** (suppl 36): 1–290.
- Bolland MJ, Grey A, Gamble GD, Reid IR. The effect of vitamin D supplementation on skeletal, vascular, or cancer outcomes: a trial sequential meta-analysis. *Lancet Diabetes Endocrinol* 2014; published online Jan 24. [http://dx.doi.org/10.1016/S2213-8587\(13\)70212-2](http://dx.doi.org/10.1016/S2213-8587(13)70212-2).
- Reid IR, Bolland MJ, Grey A. Effects of vitamin D supplements on bone mineral density: a systematic review and meta-analysis. *Lancet* 2013; published online Oct 11. [http://dx.doi.org/10.1016/S0140-6736\(13\)61647-5](http://dx.doi.org/10.1016/S0140-6736(13)61647-5).
- Sanders KM, Nicholson GC, Ebeling PR. Is high dose vitamin D harmful? *Calcif Tissue Int* 2013; **92**: 191–206.

TANDEM: understanding diabetes and tuberculosis

Published Online
March 24, 2014
[http://dx.doi.org/10.1016/S2213-8587\(14\)70011-7](http://dx.doi.org/10.1016/S2213-8587(14)70011-7)

The alarming rise in cases of type 2 diabetes poses a serious threat to global tuberculosis control. The number of people with diabetes is expected to rise to at least 592 million by 2035. Currently, more than 80% of adults with diabetes live in low-income or middle-income countries, and diabetes generally presents at a younger age in these countries.¹ People with diabetes are three times more likely to develop active tuberculosis than are people without diabetes, and there are now more tuberculosis patients with concomitant diabetes than with HIV coinfection.²

Basic knowledge to help understand and control the intertwined epidemics of tuberculosis and diabetes is urgently needed. Awareness of the potential public health and clinical importance of the association between the two diseases is increasing, thanks partly to a collaborative framework for care and control of tuberculosis and diabetes issued by the International Union Against Tuberculosis and Lung Disease and WHO in 2011.³ Likewise, the International Diabetes Federation

recognises the link with tuberculosis and supports efforts to simultaneously address this double burden of disease.⁴ However, many questions remain unanswered.

First, screening of patients with tuberculosis for diabetes could improve detection, early treatment, and secondary prevention of diabetes.⁵ Likewise, screening of patients with diabetes for tuberculosis could increase detection and control of tuberculosis. However, such screening is not routinely done in most settings, and the optimum and most cost-effective approach has yet to be defined. Second, diabetes is associated with increased tuberculosis treatment failure, relapse, and death,⁶ but whether optimum glucose control reduces these effects is unclear. Third, how to achieve optimum glucose control is unknown because both tuberculosis itself and antituberculosis drugs hamper glucose control in diabetes (eg, rifampicin increases the metabolism of most oral antidiabetic drugs).⁷ Fourth, no study has assessed the treatment needs of patients with newly diagnosed diabetes after tuberculosis