



Institute
and Faculty
of Actuaries



Swiss Re

Low carb, high fat – a revolution in dietary advice (for diabetics and the obese)

Dr John Schoonbee, Global Chief Medical Officer, Swiss Re

alternative title....

“How to treat a peanut allergy”

Disclaimer :

The views expressed in this presentation are those of the presenter and do not necessarily represent those of Swiss Re



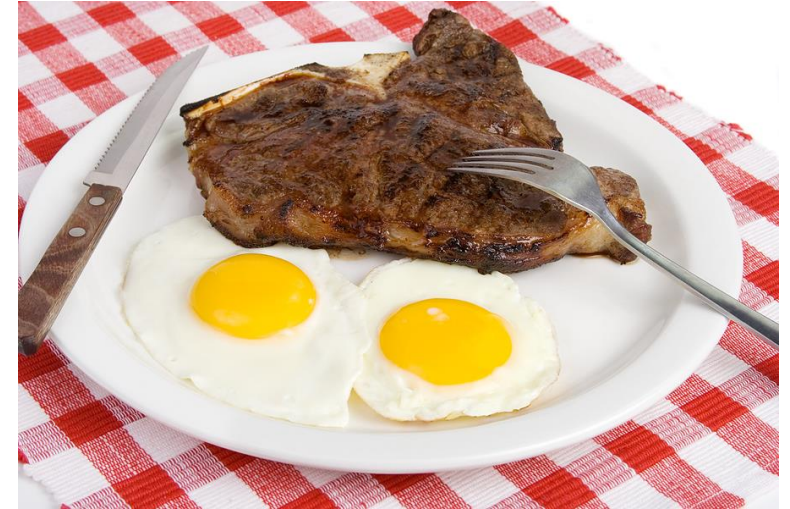
Agenda

- **Introduction**
- What are the accepted dietary guidelines?
- What evidence is there for the current guidelines?
- How well have the current guidelines worked?
- Diabetics and the obese : What can we do?



Introduction

- Which meal should a high risk diabetic with cardiovascular disease avoid?



**\$1.3
Trillion**

Bommer, Cet al..
Lancet Diabetes
Endocrinol. 2017

FINANCIAL COSTS

It is currently estimated that about £10 billion is spent by the NHS on diabetes. 10 per cent of the NHS budget is spent on diabetes⁷⁹.

This works out at around:

- £192 million a week
- £27 million a day
- **£1 million an hour**
- £19,000 a minute
- £315 a second.

The total cost (direct care and indirect costs) associated with diabetes in the UK currently stands at £23.7 billion and is predicted to rise to £39.8 billion by 2035/6⁷⁹.

One in seven hospital beds is occupied by someone who has diabetes. In some hospitals, it is as many as 30 per cent⁸⁰. People with diabetes are twice as likely to be admitted to hospital⁸¹.



Swiss Re



Institute
and Faculty
of Actuaries

Mind set shift from me to science



- Diet and weight loss is very personal
- We have (almost) all tried various things, read countless things, spoke about many different diets, strategies etc. We have been exposed by cultures, families, parents, friends, doctors, media etc
- We find it very hard to consider hard facts, to be objective when looking at dietary advice, conclusions
- Nutritional science is *very* difficult research



Swiss Re



Institute
and Faculty
of Actuaries



Agenda

- Introduction
- **What are the accepted dietary guidelines?**
- What evidence is there for the current guidelines?
- How well have the current guidelines worked?
- Diabetics and the obese : What can we do?



U.S. DIETARY GOALS

1. Increase carbohydrate consumption to account for 55 to 60 percent of the energy (caloric) intake.

2. Reduce overall fat consumption from approximately 40 to 30 percent energy intake.

3. Reduce saturated fat consumption to account for about 10 percent of total energy intake; and balance that with poly-unsaturated and mono-unsaturated fats, which should account for about 10 percent of energy intake each.

4. Reduce cholesterol consumption to about 300 mg. a day.

5. Reduce sugar consumption by about 40 percent to account for about 15 percent of total energy intake.

6. Reduce salt consumption by about 50 to 85 percent to approximately 3 grams a day.



Swiss Re



Institute
and Faculty
of Actuaries

USA today

Saturated Fats, *Trans* Fats, and Cholesterol

Saturated Fats

Healthy intake: Intake of saturated fats should be limited to less than 10 percent of calories per day by replacing them with unsaturated fats and while keeping total dietary fats within the age-appropriate AMDR. The human body uses some saturated fats for physiological and structural functions, but it makes more than enough to meet those needs. **Individuals 2 years and older therefore have no dietary requirement for saturated fats.**

Strong and consistent evidence shows that replacing saturated fats with unsaturated fats, especially polyunsaturated fats, is associated with reduced blood levels of total cholesterol and of low-density lipoprotein-cholesterol (LDL-cholesterol). Additionally, strong and consistent evidence shows that replacing saturated fats with polyunsaturated fats is associated with a reduced risk of CVD events (heart attacks) and CVD-related deaths.

Some evidence has shown that replacing saturated fats with plant sources of monounsaturated fats, such as olive oil and nuts, may be associated with a reduced risk of CVD. However, the evidence base for monounsaturated fats is not as strong as the evidence base for replacement with polyunsaturated fats. Evidence has also shown that replacing saturated fats with carbohydrates reduces blood levels of total and LDL-cholesterol, but increases blood levels of triglycerides and reduces high-density lipoprotein-cholesterol (HDL-cholesterol). Replacing total fat or saturated fats with carbohydrates is not associated with reduced risk of CVD. Additional research is needed to determine whether this relationship is consistent across categories of carbohydrates (e.g., whole versus refined grains; intrinsic versus added sugars), as they may have different associations with various health outcomes. **Therefore, saturated fats in the diet should be replaced with polyunsaturated and monounsaturated fats.**

From the latest US Government dietary guidelines :
(<http://health.gov/dietaryguidelines/2015/guidelines/>.)



Swiss Re



Institute
and Faculty
of Actuaries

UK today

Healthy Eating Advice

1. The Government recommends that all individuals should consume a diet that contains:

- plenty of starchy foods such as rice, bread, pasta and potatoes (choosing wholegrain varieties when possible)
- plenty of fruit and vegetables; at least 5 portions of a variety of fruit and vegetables a day
- some protein-rich foods such as meat, fish, eggs, beans and non dairy sources of protein, such as nuts and pulses
- some milk and dairy, choosing reduced fat versions or eating smaller amounts of full fat versions or eating them less often
- just a little saturated fat, salt and sugar

The eatwell plate

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.

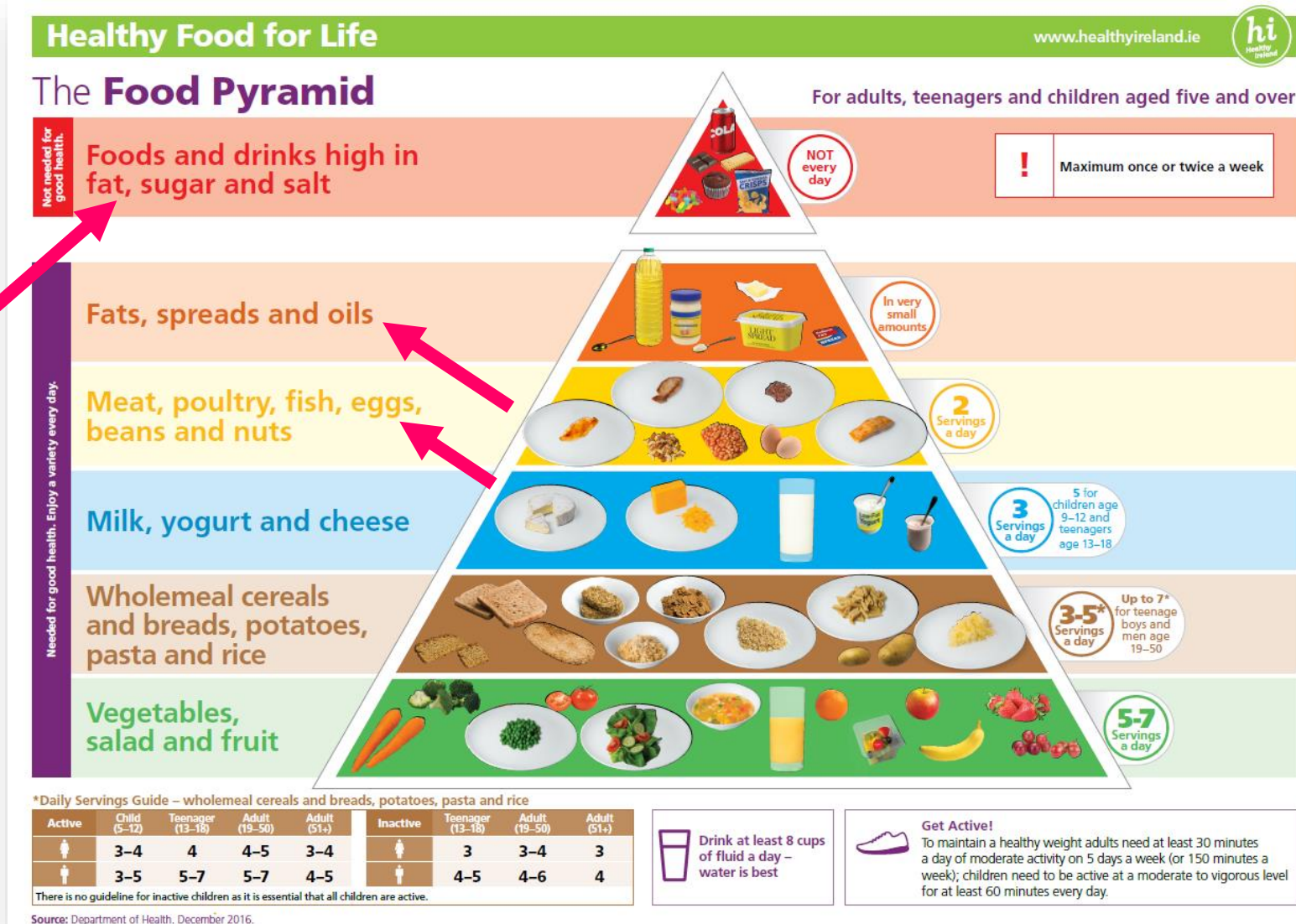


Swiss Re



Institute
and Faculty
of Actuaries

Ireland today



Swiss Re



Institute
and Faculty of Actuaries

Enjoy food home

What's new this month

Eating with diabetes

► What is a healthy, balanced diet?

► 10 ways to eat well with diabetes

► Kickstart healthy eating habits

► Food groups

■ Carbs and diabetes

■ Sugar and diabetes

■ Fruit and diabetes

FATS AND DIABETES

All of us need to follow a healthy, balanced diet which is low in fat.

Fat is very high in calories with each gram of fat providing more than twice as many calories compared to protein and carbohydrate.

Eating too much fat can lead to you taking in more calories than your body needs which causes weight gain which can affect your diabetes control and overall health.

The type of fat is important too. Having too much saturated fat in your diet can cause high levels of what's known as 'bad cholesterol' (low-density lipoprotein or LDL), which increases the risk of cardiovascular disease (CVD).



“having too much saturated fat in your diet can cause high levels of what's known as ‘bad cholesterol’.....which increases the risk of CVD”



Swiss Re



Institute
and Faculty
of Actuaries

Australia

Lifestyle changes to avoid type 2 diabetes

Healthy eating: A healthy eating plan for losing weight and reducing the risk of type 2 diabetes should include a reduction in total energy (kilojoule) and fat intake, particularly foods containing saturated fat such as butter, full fat dairy products, fatty meats, takeaway foods, biscuits, cakes and pastries. Instead, choose a wide range of high fibre, low glycemic index (GI) carbohydrate foods such as wholegrain breads and cereals, legumes and fruit. An accredited practising dietitian (APD) can help you work out a meal plan that's right for you.

Revised 2012 A diabetes information series from Diabetes State/Territory Organisations – Copyright© 2012

The original medical and educational content of this information sheet has been reviewed by the Health Care and Education Committee of Diabetes Australia



Swiss Re



Institute
and Faculty
of Actuaries



Institute
and Faculty
of Actuaries

**Current guidelines (including
for diabetics) demonize fat
while encouraging
carbohydrate*
intake**



Agenda

- Introduction
- What are the accepted dietary guidelines?
- **What evidence is there for the current guidelines?**
- How well have the current guidelines worked?
- Diabetics and the obese : What can we do?

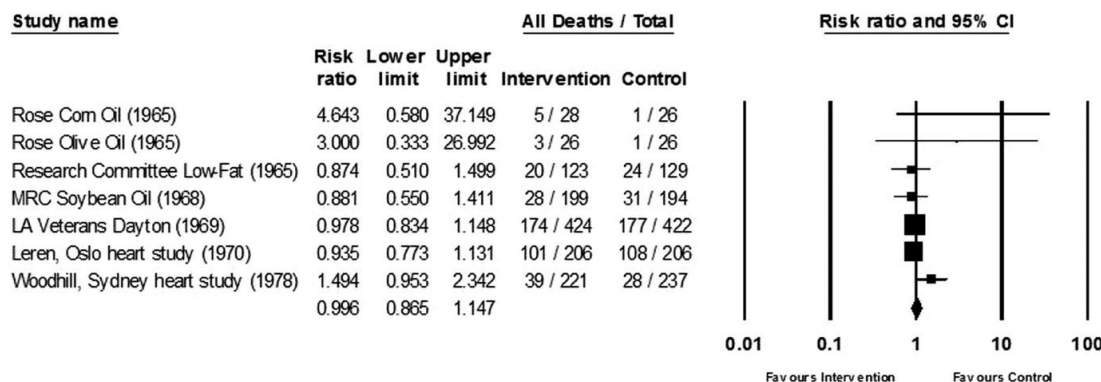


Available evidence in 1977

openheart Evidence from randomised controlled trials did not support the introduction of dietary fat guidelines in 1977 and 1983: a systematic review and meta-analysis

Zoë Harcombe,¹ Julien S Baker,¹ Stephen Mark Cooper,² Bruce Davies,³ Nicholas Sculthorpe,¹ James J DiNicolantonio,⁴ Fergal Grace¹

Dietary Intervention & All Deaths



Meta Analysis Random Effects Method

No randomised controlled trial (RCT) had tested government dietary fat recommendations before their introduction. Recommendations were made for 276 million people following secondary studies of 2467 males, which reported identical all-cause mortality. RCT evidence did not support the introduction of dietary fat guidelines.

- There was best practice, randomised controlled trial, evidence available to the dietary committees, which was not considered and should have been. The results of the present meta-analysis support the hypothesis that the **available RCTs did not support the introduction of dietary fat recommendations** in order to reduce CHD risk or related mortality.



What about an up-to-date review?



OPEN ACCESS



Intake of saturated and trans unsaturated fatty acids and risk of all cause mortality, cardiovascular disease, and type 2 diabetes: systematic review and meta-analysis of observational studies

Russell J de Souza,^{1,2,3,4} Andrew Mente,^{1,2,5} Adriana Maroleanu,² Adrian I Cozma,^{3,4} Vanessa Ha,^{1,3,4} Teruko Kishibe,⁶ Elizabeth Uleryk,⁷ Patrick Budykowski,⁴ Holger Schünemann,^{1,8} Joseph Beyene,^{1,2} Sonia S Anand^{1,2,5,8}

Saturated fat intake was not associated with all cause mortality (relative risk 0.99, 95% confidence interval 0.91 to 1.09), CVD mortality (0.97, 0.84 to 1.12), total CHD (1.06, 0.95 to 1.17), ischemic stroke (1.02, 0.90 to 1.15), or type 2 diabetes (0.95, 0.88 to 1.03).

BMJ 2015;351:h3978



Swiss Re



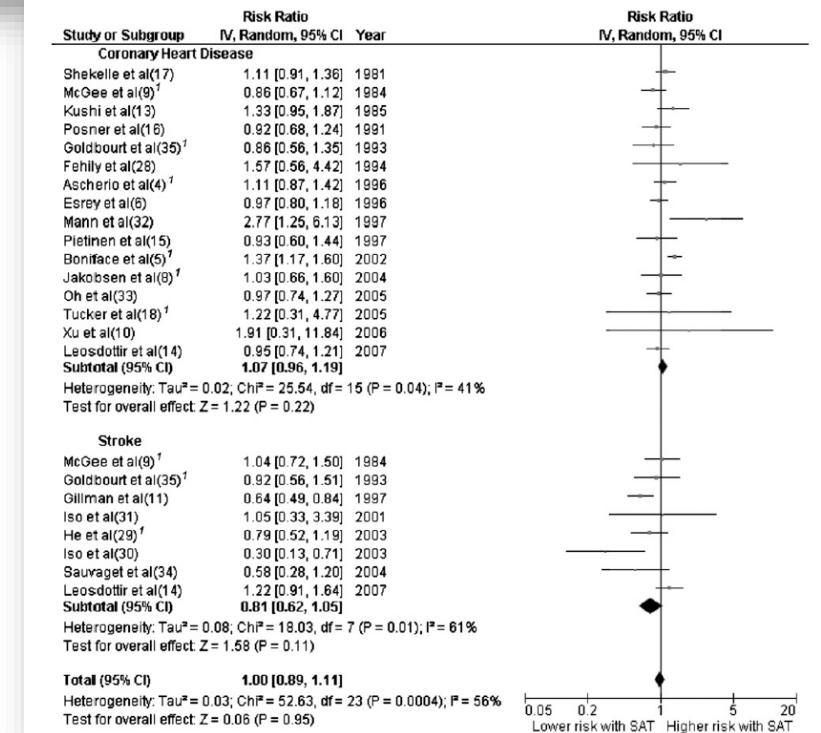
Institute
and Faculty
of Actuaries

Association of saturated fat with cardiovascular disease

- During 5–23 y of follow-up of 347,747 subjects, 11,006 developed CHD or stroke. Intake of saturated fat was not associated with an increased risk of CHD, stroke, or CVD.
- Conclusions: A meta-analysis of prospective epidemiologic studies showed **that there is no significant evidence for concluding that dietary saturated fat is associated with an increased risk of CHD or CVD.**

Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease^{1–5}

Patty W Siri-Tarino, Qi Sun, Frank B Hu, and Ronald M Krauss





Institute
and Faculty
of Actuaries

There is poor evidence high(er) (saturated) fat intake increases CVD disease or mortality (yet the guidelines seem NOT to reflect this evidence)

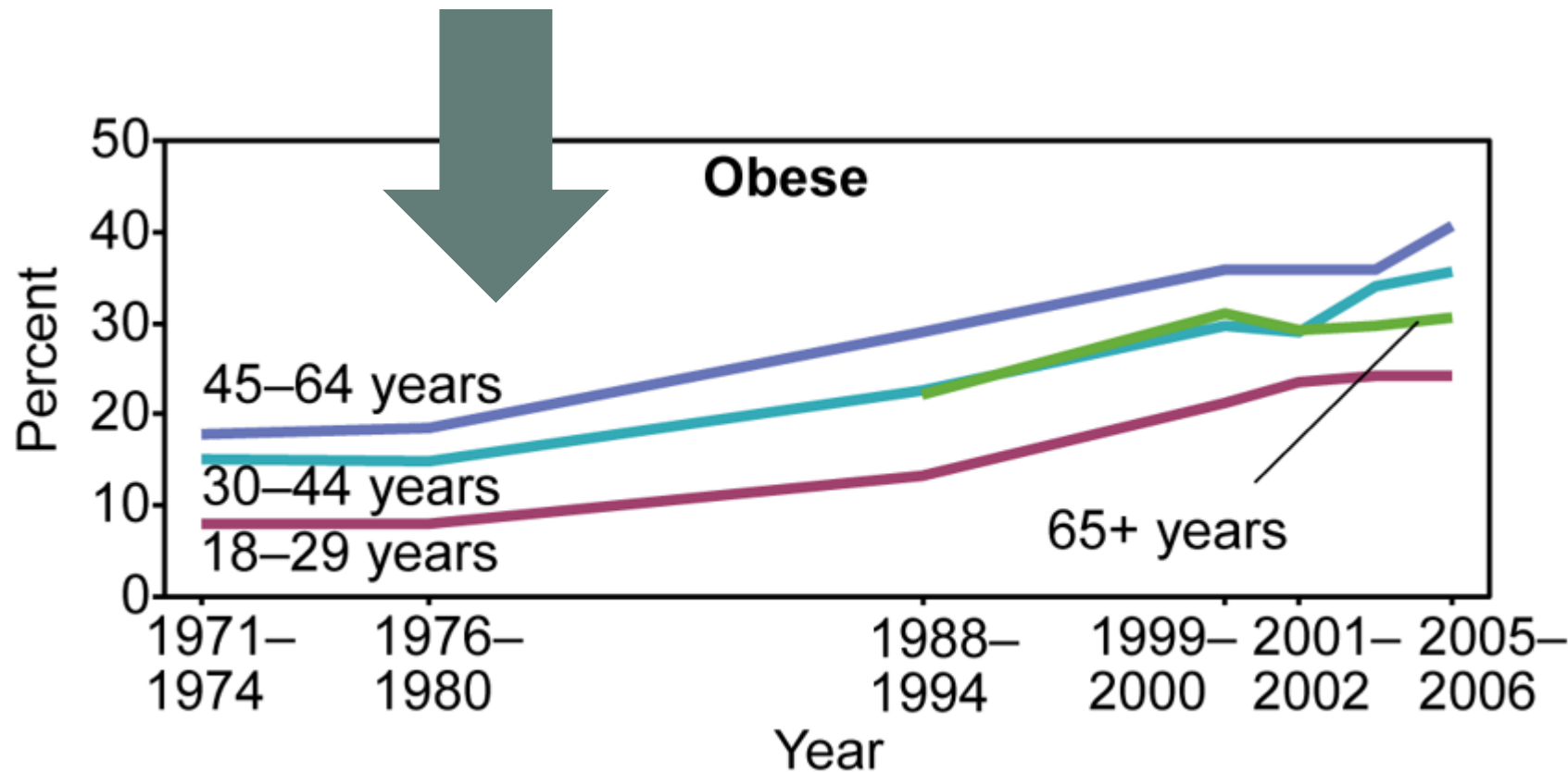


Agenda

- Introduction
- What are the accepted dietary guidelines?
- What evidence is there for the current guidelines?
- **How well have the current guidelines worked?**
- Diabetics and the obese : What can we do?



Obesity since the introduction of the US guidelines



*causation
vs.
association*

<http://www.ncbi.nlm.nih.gov/books/NBK19623>



Swiss Re



Institute
and Faculty
of Actuaries

Obesity trends and costs

The screenshot shows the TIME magazine website's 'Health' section. The main article is titled 'Obesity Now Costs the World \$2 Trillion a Year' by Tessa Berenson, dated Nov. 20, 2014. The article's sub-headline is 'Half the world's population could be obese by 2030, warns a McKinsey Global Institute report'. The text states that the global cost of obesity has risen to \$2 trillion annually, more than the combined costs of armed violence, war, and terrorism. It also mentions that the McKinsey Global Institute report says currently almost 30% of the world's population is obese, and that if present trends continue, that almost half the population will be clinically overweight or obese by 2030. The report cautioned that no single solution would reverse the problem, instead calling for a "systemic, sustained portfolio of initiatives" to tackle the crisis, such as better nutritional label, healthier food at schools, advertising restrictions on fatty foods and beverages, and public health campaigns. On the left sidebar, there is an IBERIA advertisement for Lima flights starting at CHF 972. Below the ad are four video thumbnails: 'Watch Jacob Tremblay's Adorable Acceptance Speech at the Critics' Choice Awards', 'How Democrats Flubbed the Encryption Question at Debate', 'Meet the YouTube Stars Who Asked Questions at the Democratic Debate', and 'Spotlight Wins Big at Critics' Choice Awards'.

The UK's growing obesity crisis means that by 2030:

74%

of men in UK will be overweight

64%

of women in UK will be overweight

36%

of men and 33% of women are predicted to be obese.

<http://www.itv.com/news/2016-03-21/facts-about-the-uks-growing-obesity-crisis/>
Public Health England

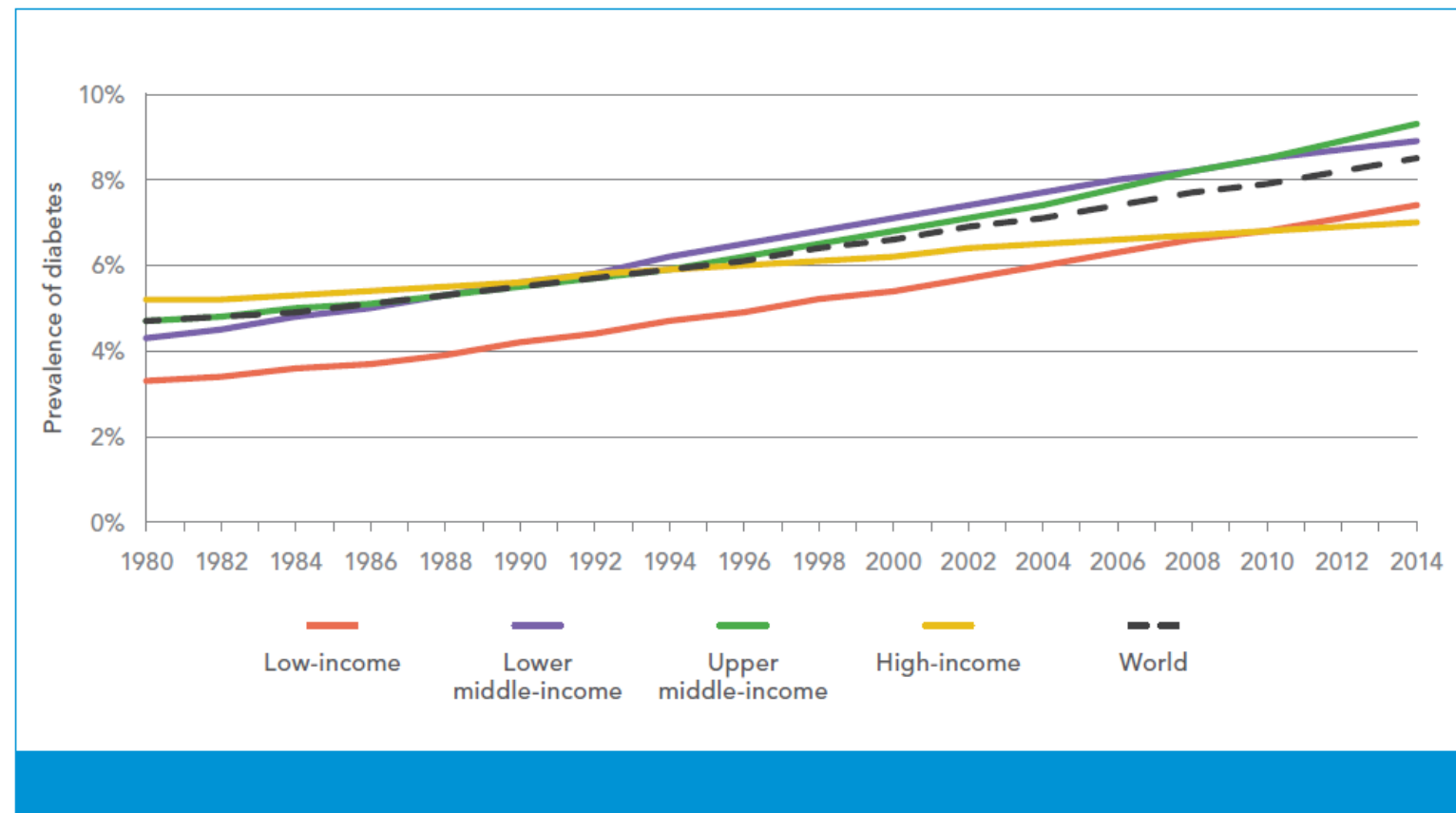


Swiss Re



Institute
and Faculty
of Actuaries

Trends in the prevalence of diabetes, 1980–2014



GLOBAL REPORT ON DIABETES



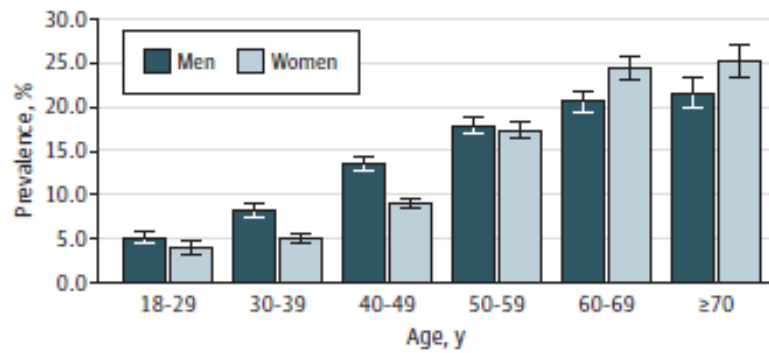
Swiss Re



Institute
and Faculty
of Actuaries

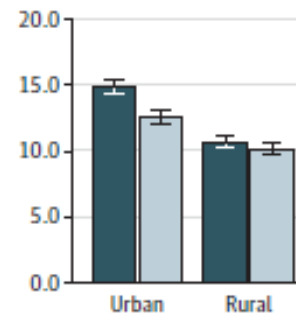
Its not only Western countries

A Diabetes

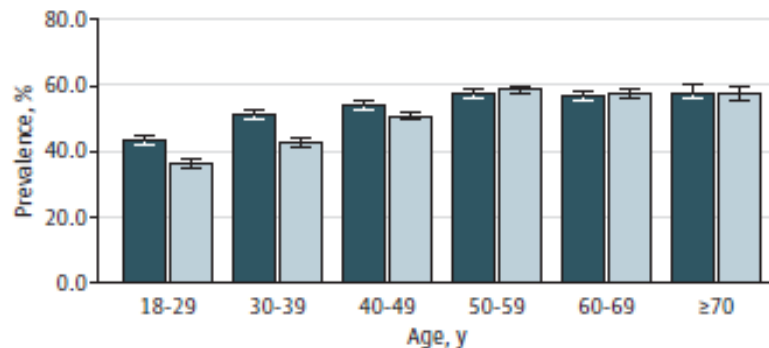


No. of participants

Men	7240	8056	10985	9340	6088	3434
Women	7470	9952	14005	11626	6721	3741

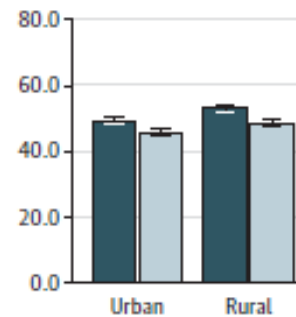


B Prediabetes



No. of participants

Men	7240	8056	10985	9340	6088	3434
Women	7470	9952	14005	11626	6721	3741



Original Investigation

Prevalence and Control of Diabetes in Chinese Adults

Yu Xu, PhD; Limin Wang, PhD; Jiang He, MD, PhD; Yufang Bi, MD, PhD; Mian Li, PhD; Tiange Wang, PhD; Linhong Wang, PhD; Yong Jiang, MS; Meng Dai, BS; Jieli Lu, MD, PhD; Min Xu, PhD; Yichong Li, MS; Nan Hu, MS; Jianhong Li, MS; Shengquan Mi, PhD; Chung-Shiuan Chen, MS; Guangwei Li, MD, PhD; Yiming Mu, MD, PhD; Jiajun Zhao, MD, PhD; Lingzhi Kong, MD; Jialun Chen, MD; Shenghan Lai, MD, MPH; Weiqing Wang, MD, PhD; Wenhua Zhao, PhD; Guang Ning, MD, PhD; for the 2010 China Noncommunicable Disease Surveillance Group

JAMA. 2013;310(9):948-958



Swiss Re



Institute
and Faculty
of Actuaries

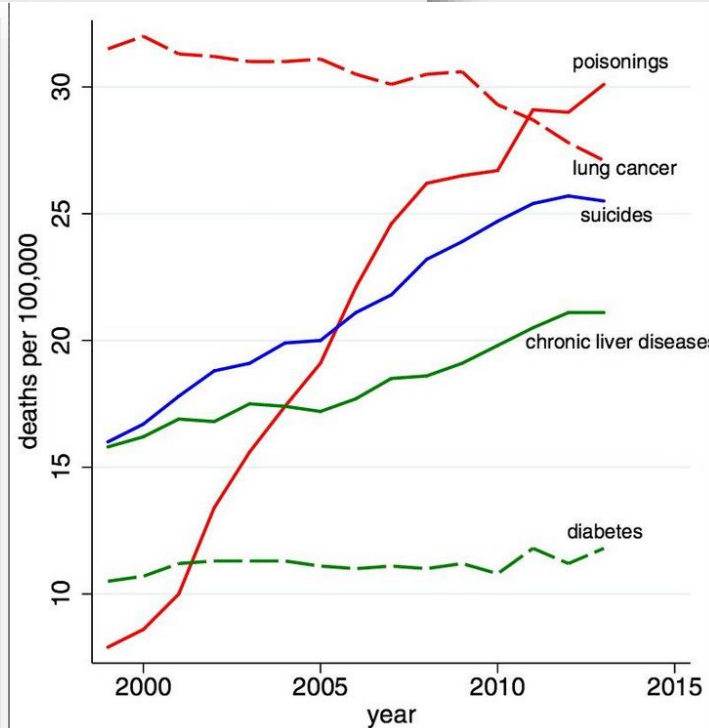
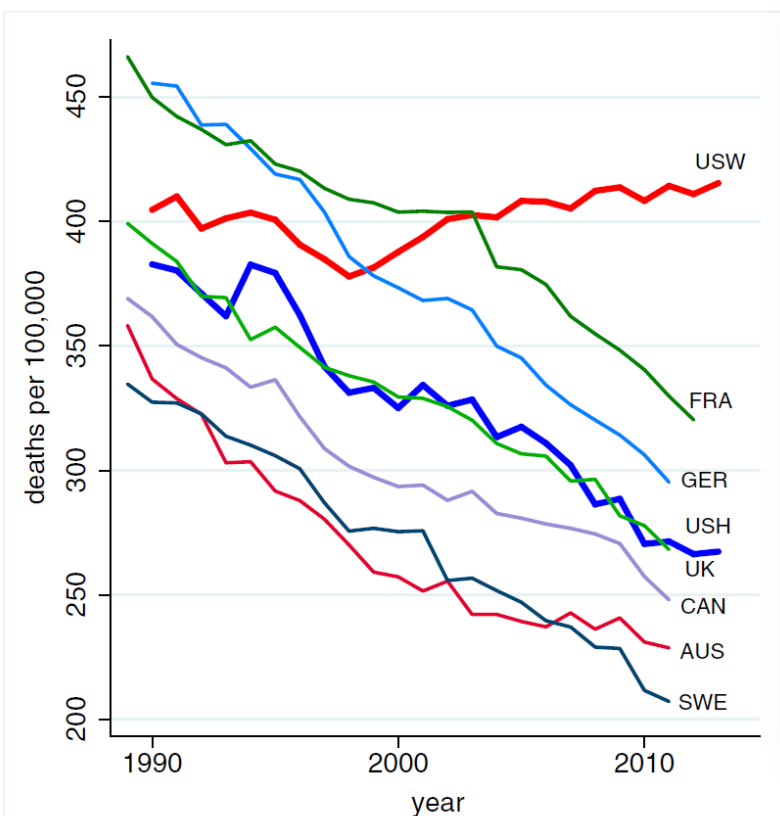
Mortality improvements (or not)

Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century

Anne Case¹ and Angus Deaton¹

Woodrow Wilson School of Public and International Affairs and Department of Economics, Princeton University, Princeton, NJ 08544

Contributed by Angus Deaton, September 17, 2015 (sent for review August 22, 2015; reviewed by David Cutler, Jon Skinner, and David Weir)



US life expectancy

At birth

Both sexes 78.9 (2014) / 78.8 (2015)

Male

76.5 (2014) / 76.3 (2015)

Female

81.3 (2014) / 81.2 (2015)

2014 2015

<http://www.cdc.gov/nchs/data/databriefs/db267.pdf>



Swiss Re



Institute and Faculty of Actuaries

Deaths attributable to diabetes

OPEN ACCESS PEER-REVIEWED

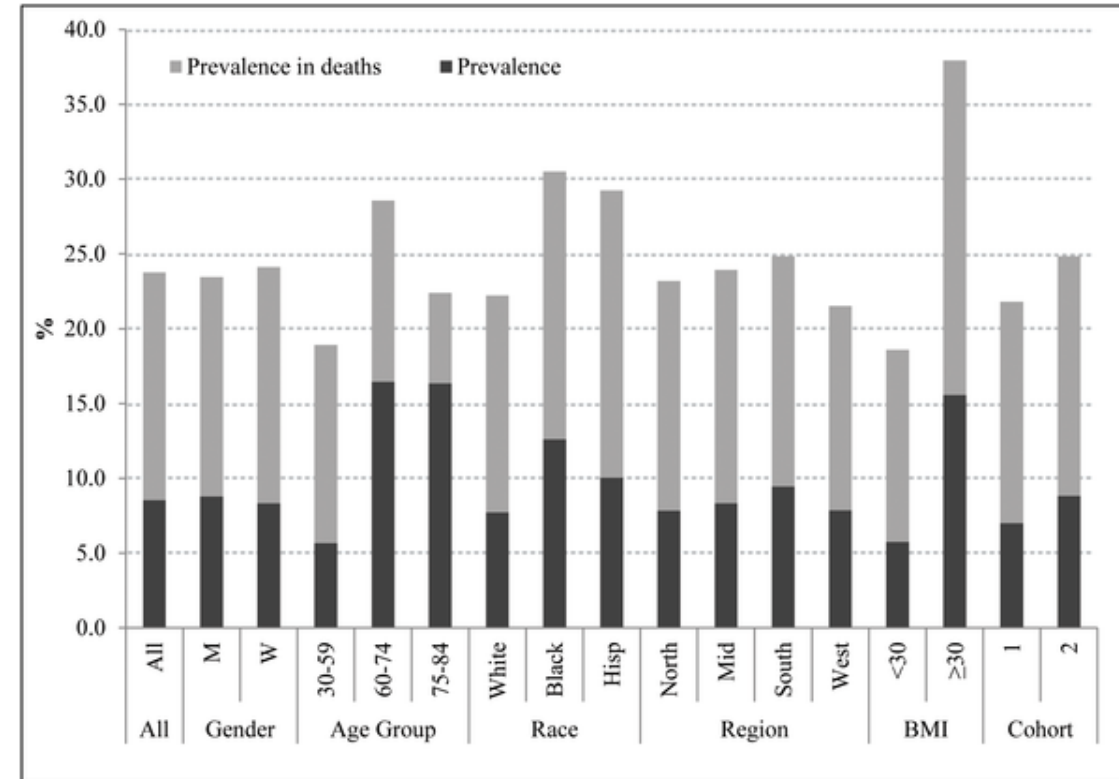
RESEARCH ARTICLE

Deaths Attributable to Diabetes in the United States: Comparison of Data Sources and Estimation Approaches

Andrew Stokes, Samuel H. Preston

Published: January 25, 2017 • <http://dx.doi.org/10.1371/journal.pone.0170219>

- We found a high degree of consistency between data sets and definitions of diabetes in the hazard ratios, estimates of diabetes prevalence, and estimates of the proportion of deaths attributable to diabetes. The proportion of deaths attributable to diabetes was estimated to be 11.5% using self-reports in NHIS, 11.7% using self-reports in NHANES, and 11.8% using HbA1c in NHANES. **Among the sub-groups that we examined, the PAF was highest among obese persons at 19.4%.**
- The proportion of deaths in which diabetes was assigned as the underlying cause of death (3.3–3.7%) severely understated the contribution of diabetes to mortality in the United States.**



Prevalence of diabetes in the sample and among individuals who died in the total NHIS sample and in various population subgroups



Swiss Re



Institute
and Faculty
of Actuaries



Institute
and Faculty
of Actuaries

Despite recommendations for reducing fat and increasing carbohydrate* there has been an increase in the obesity and diabetes epidemic



Agenda

- Introduction
- What are the accepted dietary guidelines?
- What evidence is there for the current guidelines?
- How well have the current guidelines worked?
- **Diabetics and the obese : What can we do?**



What diabetics and obese people tend to eat



Swiss Re



Institute
and Faculty of
Actuaries

Healthy yoghurt



NUTRITION

Serving Size: 1 cup

	Amount per Serving	My Daily Value
Calories	160Kcal	9%
Calories from Fat	0Kcal	0%
Total Fat	0g	0%
Saturated Fat	0g	0%
Trans Fat	0g	0%
Cholesterol	0mg	0%
Sodium	160mg	7%
Total Carbohydrate	30g	13%
Dietary Fiber	0g	0%
Sugars	28g	65%
Added Sugars	20.51g	85%



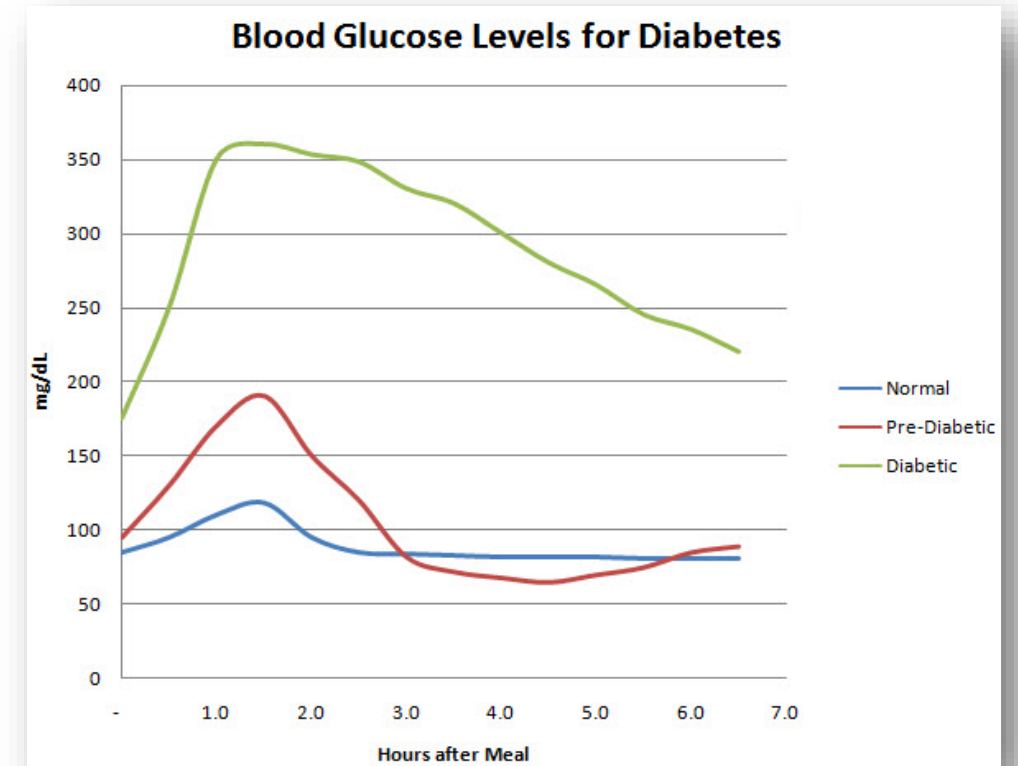
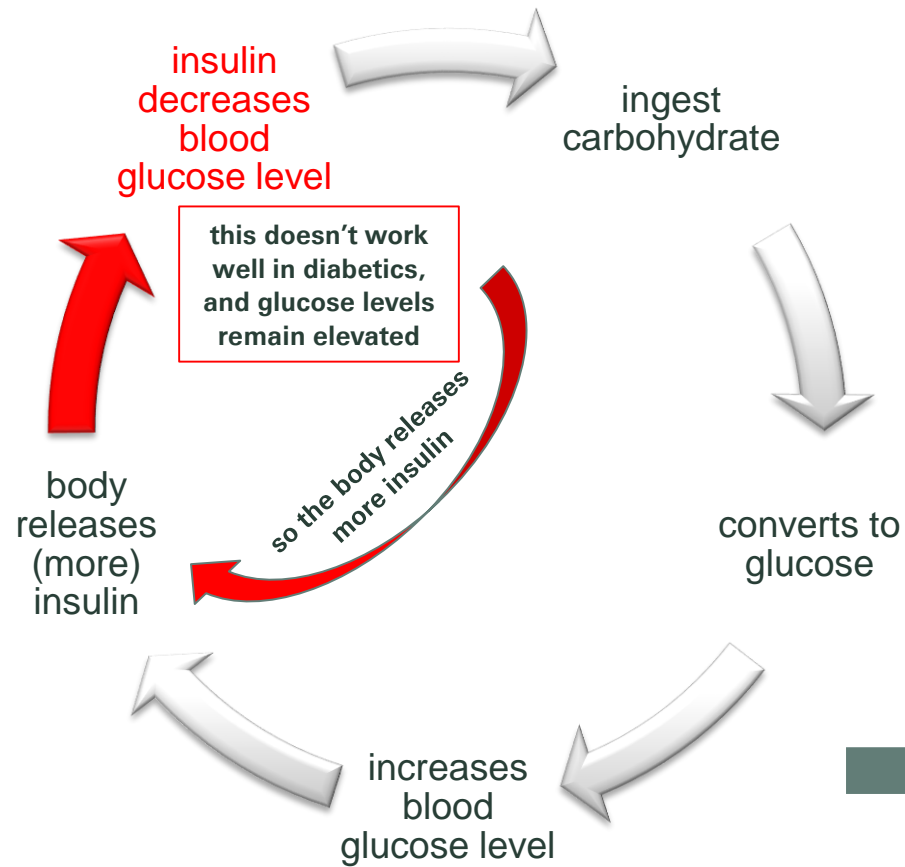
Swiss Re



Institute
and Faculty
of Actuaries

Pathogenesis of type 2 diabetes

.... ending up with higher levels of **glucose** and higher levels of **insulin**



This chronic HYPERglycemia (**glucose**) and HYPERinsulinemia (**insulin**) causes inflammation and damage to heart vessels and nervous tissue related to diabetes



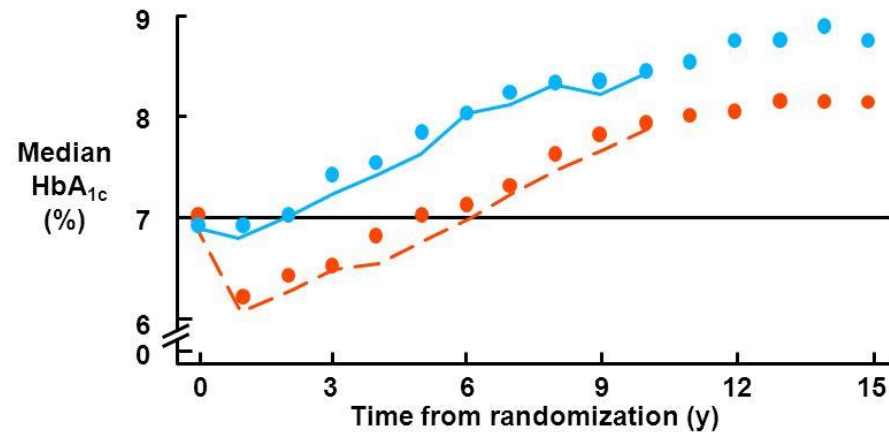
Swiss Re



Institute
and Faculty
of Actuaries

Striving for better control

UKPDS Results: Obese Patients, Intensive (Metformin) vs Conventional Therapy



10-year cohort

Patients followed for 10 years

— Conventional

- - Intensive (Metformin)

Cross-sectional

All patients assigned to regimen

● Conventional

● Intensive (Metformin)

UKPDS Group. *Lancet*. 1998;352:854-865.

Although the sugar levels are better than those less well managed, there is a progressive nature to the steady worsening of average blood glucose

GLOBAL REPORT ON DIABETES



KEY MESSAGES

Diabetes is a chronic, progressive disease characterized by elevated levels of blood glucose.

As the WHO says, diabetes is *chronic* and *progressive*



Swiss Re



Institute
and Faculty
of Actuaries

But, how would you treat a peanut allergy?

- Avoid peanuts?



or

- Advise to continue eating peanuts
- Give medication to control allergic reactions
- If medication stops working, give more medications
- If those fail too, give injectable meds
- For better control, consider infusion of meds



Swiss Re



Institute
and Faculty
of Actuaries

Treating diabetes as you would a peanut allergy...

Low carbohydrate diet to achieve weight loss and improve HbA1c in type 2 diabetes and pre-diabetes: experience from one general practice

Table 1. Clinical characteristics prior to and following a low-carbohydrate intervention

	<i>n</i>	Pre-intervention (95% CI)	Post-intervention (95% CI)	Change between pre- and post-intervention (95% CI)	<i>P</i> value
Sex (male/female)	68	33/35	–	–	–
Age (years)	68	58.3	–	–	–
Weight (kg)	64	97.8 (93.6, 101.9)	89.0 (84.9, 93.1)	–8.8 (–10.0, –7.5)	<0.001
SBP (mmHg)	27	144 (136, 152)	135 (130, 140)	–9 (4, 15)	0.002
DBP (mmHg)	27	85 (80, 89)	79 (75, 83)	–6 (2, 10)	0.005
GGT (iu/L)	65	76.9 (58.3, 95.6)	41.8 (33.0, 50.3)	–29.9 (–43.7, –16.2)	<0.001
HbA _{1c} * (mmol/mol)	38	52.4 (48.0, 56.9)	42.4 (39.7, 45.0)	–10.0 (–13.9, –6.2)	<0.001
Total cholesterol (mmol/L)	58	5.7 (5.4, 6.0)	5.3 (5.0, 5.7)	–0.3 (–0.5, –0.1)	<0.001
Cholesterol:HDL-cholesterol ratio	57	4.3 (3.9, 4.6)	3.8 (3.5, 4.1)	–0.4 (–0.8, –0.1)	<0.001

*HbA_{1c} levels were only followed up in those cases where the baseline was >41 mmol/mol (5.9%).
DBP=diastolic blood pressure; GGT=gamma-glutamyl transpeptidase; SBP=systolic blood pressure; *n*=number of people; 95% CI=95% confidence interval.

Life	ADB	TPD	WOP	CI	DI	Cancer
50%	Std	100%	100%	75%	100%	50%

The HbA1c level is suggestive of IFG/IGT.

Illustrative
ratings
before
intervention

Illustrative
ratings after
intervention

Life : +50 → std

CI: +75 → std

DI: +100 → +25

Life	ADB	TPD	WOP	CI	DI	Cancer
Std	Std	Std	Std	Std	25%	Std



Swiss Re



Institute
and Faculty
of Actuaries

Case study 1

- 85kg, early 20's
- 140kg and T2D diagnosed at age 32
- Followed low fat diabetic diet, weight got worse, metformin stopped working, told to take insulin
- Self researched, went LCHF
- Lost 10kg first month
- After 2 weeks no need for meds – glucose dropped from 185 with metformin to 75-90 with food (HbA1c 8 →5)
- 1 year on, lost 42 kg

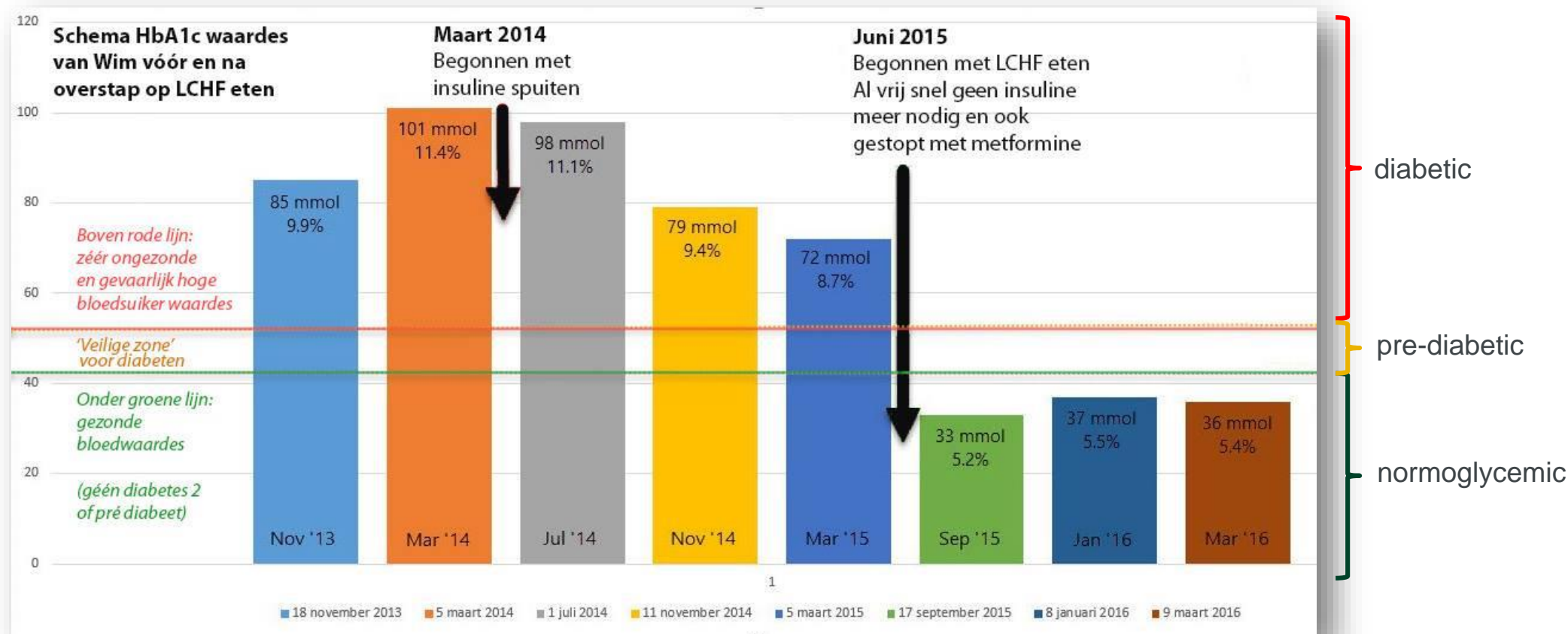


Swiss Re



Institute
and Faculty
of Actuaries

Case study 2





Institute
and Faculty
of Actuaries

Reducing carbohydrate and increasing fat (LCHF) in diabetic and obese seems to lead to significant weight loss and a reversal of most metabolic syndrome parameters

How would you treat a ~~peanut allergy?~~

~~diabetes~~
(i.e. carb intolerance)

- Avoid ~~peanuts?~~
carbohydrates



or

- Advise to continue eating ~~peanuts~~ *carbohydrates*
- Give medication to control ~~allergic reactions~~ *diabetes*
- If medication stops working, give more medications
- If those fail too, give ~~injectable meds~~ *insulin*
- For better control, consider infusion of ~~meds~~ *insulin*



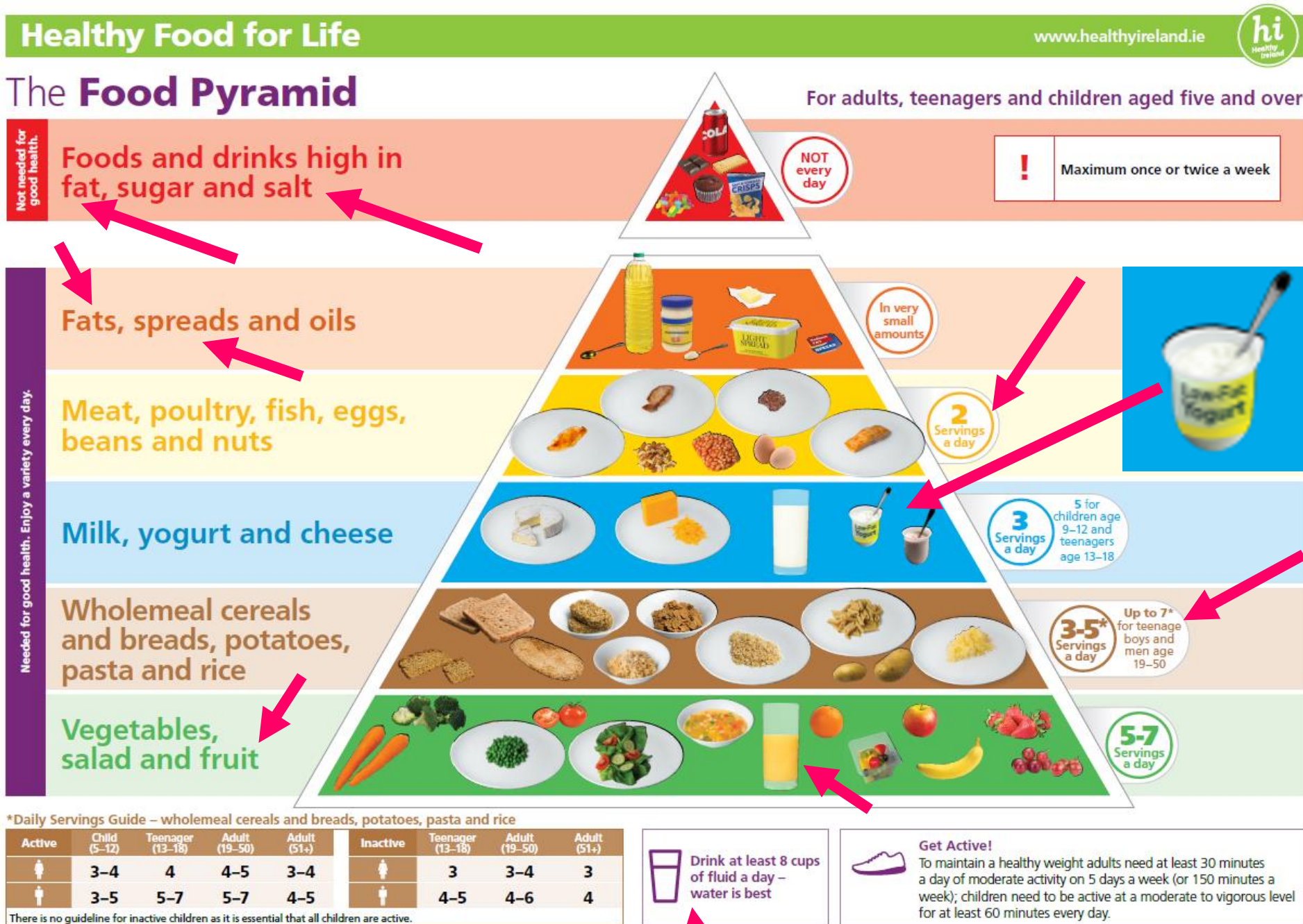
Swiss Re



Institute
and Faculty
of Actuaries

Conclusion

Nutritional
"science"?





Institute
and Faculty
of Actuaries

Legal notice

©2017 Swiss Re. All rights reserved. You are not permitted to create any modifications or derivative works of this presentation or to use it for commercial or other public purposes without the prior written permission of Swiss Re.

The information and opinions contained in the presentation are provided as at the date of the presentation and are subject to change without notice. Although the information used was taken from reliable sources, Swiss Re does not accept any responsibility for the accuracy or comprehensiveness of the details given. All liability for the accuracy and completeness thereof or for any damage or loss resulting from the use of the information contained in this presentation is expressly excluded. Under no circumstances shall Swiss Re or its Group companies be liable for any financial or consequential loss relating to this presentation.

