

CIVILISATION DISEASES IN 21ST CENTURY, THREATS AND PREVENTIVE MEASURES

The background of the slide features a large, faded seal of Charles University in Prague. The seal is circular and depicts an eagle with spread wings perched on a globe, with two smaller birds at its feet. The Latin text "SIGILLUM UNIVERSITATIS CAROLINAE PRAGAE" is visible around the perimeter of the seal.

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Civilization diseases

Definition

- 💡 diseases that appear to increase in frequency as countries become more industrialized and people live longer...

Causes and consequences

- 💡 Diet and unhealthy lifestyle with poor diet habits, tobacco smoking, excessive alcohol drinking, and a lack of exercise being the major contributing factors to epidemic incidence increase of:
 - 💡 **Cardiovascular diseases**
 - 💡 **Cancer**
 - 💡 **Obesity / metabolic syndrome / type 2 diabetes / chronic liver diseases**
 - 💡 **Chronic obstructive pulmonary disease, certain neuropsychiatric diseases...**

Population health – trends and threats...

Pandemy of obesity:

- 🍏 **In 2014, almost 2 billion adults (39%!) were overweight, 600 million (13%) being obese...**
- 🍏 **In 2020, 2/3 of all diseases will be related to overweight**
- 🍏 **Obesity-caused NASH is the 3rd most common cause of liver transplantation in USA, and will become the leading cause by 2020**
- 🍏 **EU is copying exactly the same trends seen in the USA...**

Obesity-related diseases

Cardiovascular diseases

Ischemic heart disease, arrhythmias, stroke, arterial hypertension

Blood coagulation disorders

Disordered metabolism of:

blood lipids, saccharides (diabetes...), uric acid
... resulting frequently in fully blown metabolic syndrome

Cancer

Gut, oesophagus, liver, gallbladder, prostate, uterus, breast, kidneys, lymph nodes

GI diseases

GERD, constipation, diseases of gallbladder, liver (NAFLD!)

Chronic kidney diseases

Locomotor apparatus diseases

Neuro-psychiatric diseases

Depressions, anxiety, Alzheimer disease, sleeping apnoea syndrome...

OBGYN diseases

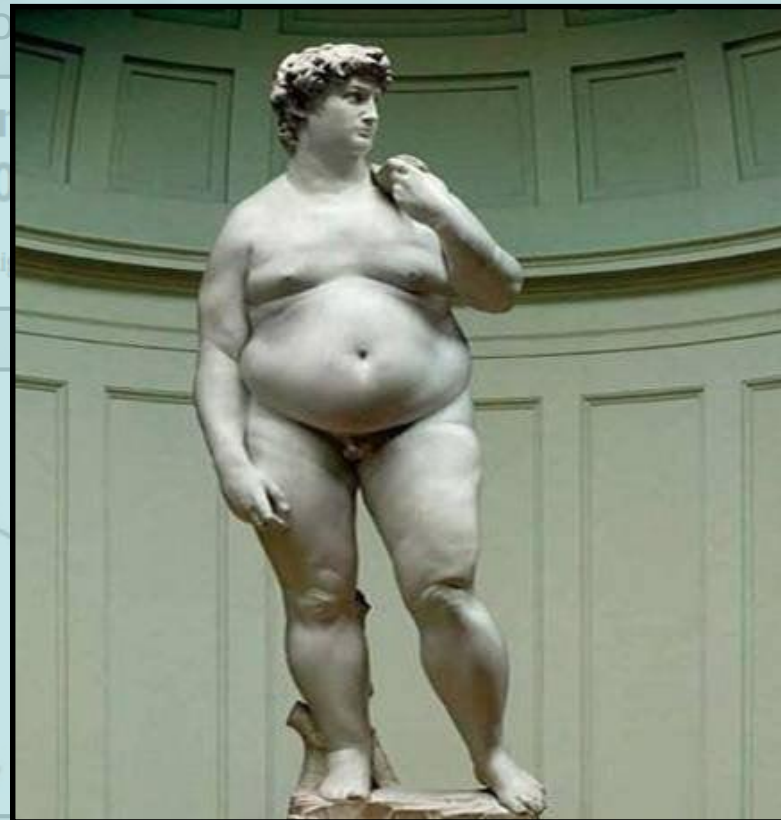
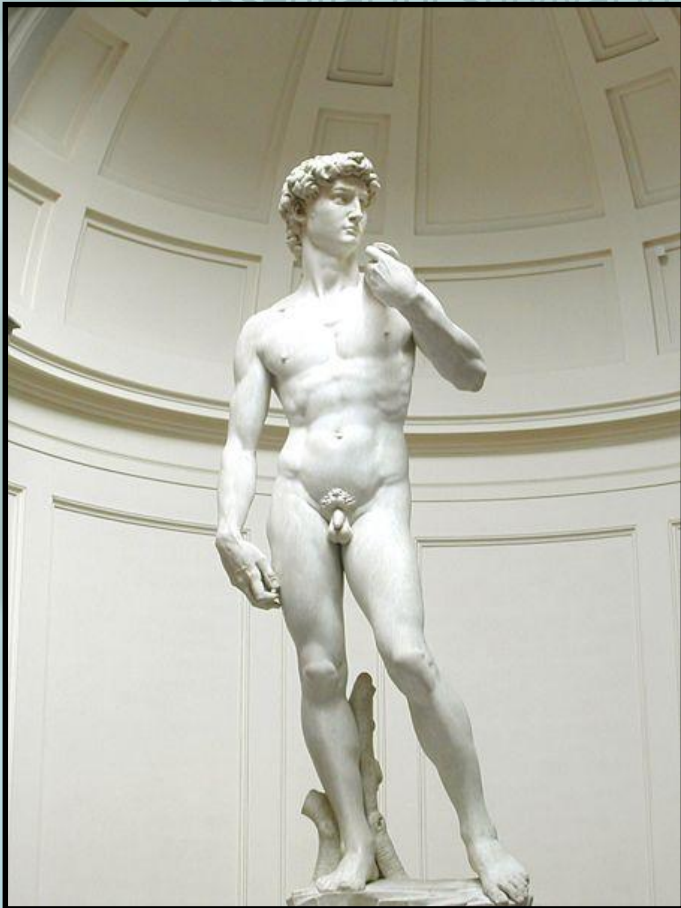
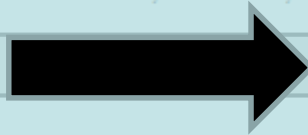
Infertility, premature deliveries, gestational diabetes, increased risk of obesity, diabetes and metabolic syndrome

Thrifty genes

- Genes responsible for saving energy,
- essential for survival in times when food was not within easy access,
- are still in function

the American In
Likely Genetic C

Martin C. Carey¹ and Beverly Pa



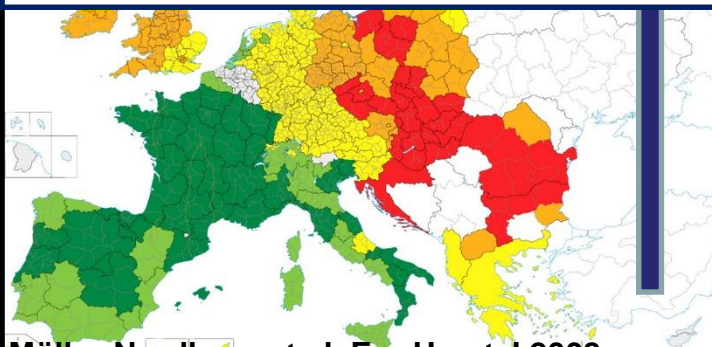
Unification of dietary patterns?

- 🍏 South-to-North gradient in cardiovascular diseases,
- 🍏 but opposite gradient in blood levels of oxidative stress markers!

The Journal of Nutrition
Nutritional Epidemiology

Adherence to the Mediterranean Diet Pattern Has Declined in Spanish Adults¹⁻³

Luz M. León-Muñoz,^{4,5}* Pilar Guallar-Castillón,^{4,5} Auxiliadora Graciani,^{4,5} Esther López-García,^{4,5}
Arthur E. Mesas,^{4,5} M. Teresa Aguilera,⁶ José R. Banegas,^{4,5} and Fernando Rodríguez-Artalejo^{4,5}



Müller-Nordhorn et al. Eur Heart J 2008

Relationship between serum bilirubin and uric acid to oxidative stress markers in Italian and Czech populations

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Obesity - many culprits...

!!! Overabundance of food !!!

- 320,000 different food items for sale in US, although supermarket shelves only have room for 50,000 products (Harris JM et al. The Food Marketing System. 2002 Agricultural Economics Report)
- American food supply is large enough to feed everyone in US twice - even after exports... (Gallo AE. Food Advertising in the United States. America's Eating Habits- Changes and Consequences- USDA)
- Economically speaking, overeating is a required condition for the survival of food-producing companies to make profits large enough to satisfy their shareholders
- In US food industry accounts for 8% of the GDP (more than a trillion dollars in sales); and employs 12% of the American labor force
- These are important obstacles preventing employment of efficient state/society-governed healthy diet policy

Other food industry-related aspects?

- Vegetable growers: gain only 5% of the market cost, while meat producers 50-60%!
- 40% of world grain production is used as food for domestic animals. 1/2 of this amount would feed all undernourished people all over the world (800 million people!).
- 70% of the 33 billion dollars spent in US on food advertising goes towards persuading the public to eat more junk food, while fruit, vegetable and grain sectors make up only 2.2%
- In comparison, USDA spends less than 300 million dollars a year on education on healthy eating.

Why healthy lifestyle?

👉 Reasons:

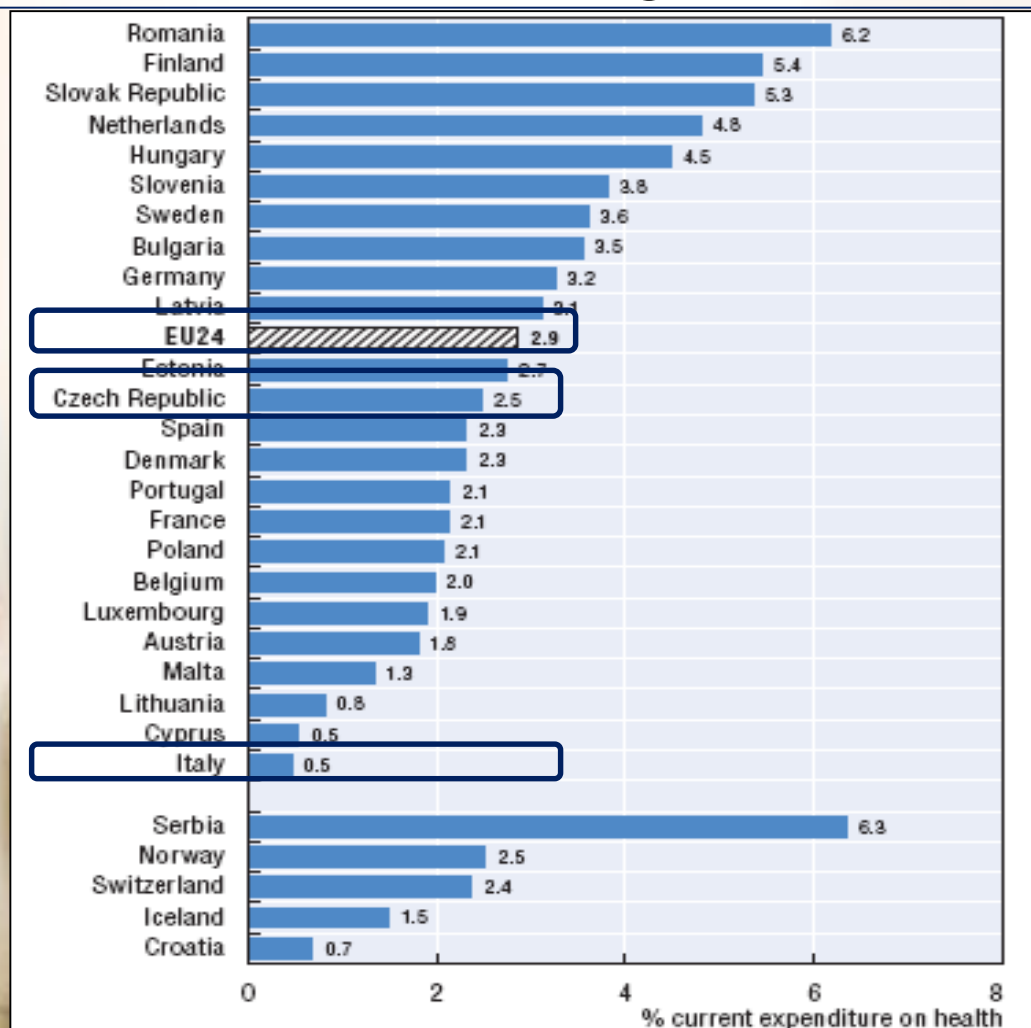
- 👉 Health-related
- 👉 Economical
- 👉 Social

👉 Point of view:

- 👉 Society
- 👉 Employer
- 👉 Individual

Healthy lifestyle – role of society?

Expenditure on prevention programmes



OECD (2012), Health at a Glance: Europe 2012, OECD Publishing

Primary source: OECD Health Data 2012; Eurostat Statistics Database; WHO Global Health Expenditure Database

Other forms of prevention?



Municipal officials are offering a gram of gold - worth about £30 at current prices - for each kilogram of weight lost in a 30-day challenge.



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Newsroom

Press Release

For Immediate Release: July 17, 2008

New Report: Investment in Disease Prevention Could Save America More than \$16 Billion in Five Years

Return on Investment of More than 5 to 1; Focus on Increasing Physical Activity, Improving Nutrition, and Preventing Smoking

Why do we invest so low money in prevention, when it is so cost-effective?

Employer-sponsored wellness programs




- 💡 Health care costs 3x higher in obese
- 💡 Industry loses in US, due to sickness of obese employees, 13 billion USD annually
- 💡 In 2004, GM company spent 286 millions USD for healthcare of obese employees
- 💡 GM Lifesteps program, introduced in 1996, covered almost 400,000 employees (75%),
- 💡 in 2005, saving estimates = 27 millions USD...
- 💡 Other examples include PepsiCo, Johnson & Johnson, Lockheed, Marriot Hotels, AT&T
- 💡 Even in Czech Republic country these preventive programs are being implemented

Efficacy of such programs?

Bank managers (n=190)			
<i>parameter</i>	<i>Before intervention</i>	<i>After 4 months</i>	<i>P-value</i>
Weight [kg]	87,9 [71,5-95,1]	↓ 84,7 [71,4-90,1]	<0.05
BMI [kg/m ²]	26,5 [24,3-28,6]	↓ 26,0 [24,0-27,6]	<0.05
Adipose tissue [%]	24,5 [20,6-29,2]	↓ 23,4 [19,4-27,4]	<0.05
Adipose tissue [kg]	19,7 [16,9-23,9]	↓ 18,1 [15,9-22,2]	<0.05

What BMI change is significant?

Each BMI decrease by 1 point in people aged 45-79 years is a/w:

-  **20% decrease of CVD risk**
-  **twice lower risk of diabetes**
-  **3-11% decrease of total mortality**

JOINT CONSENSUS STATEMENT

Guidance for a Reasonably Designed, Employer-Sponsored Wellness Program Using Outcomes-Based Incentives

*Consensus Statement of the Health Enhancement Research
Organization, American College of Occupational and Environmental
Medicine, American Cancer Society and American Cancer Society
Cancer Action Network, American Diabetes Association, and
American Heart Association.*

JOEM • Volume 54, Number 7, July 2012

CONCLUSIONS

We strongly encourage employers using outcomes-based incentives as part of wellness initiatives to incorporate these elements of a reasonably designed wellness program and consider this guidance for the design, implementation, and evaluation of such programs

mHealth, mobile Health

- 🟢 A tool for insurance companies, hospital, outpatient clinics, employees, individual users...
- 🟢 In 2013 43,000 applications focused on healthy lifestyle (*IMS Institute for Healthcare Informatics report*)
- 🟢 Some FDA approved - **BlueStar/WellDoc** for diabetic patients



Live healthy with program Sportvital Nutrition!

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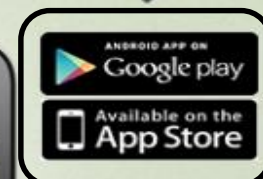
[Forgot your password?](#)



NEW REGISTRATION



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The most complete database
of food in the Czech Republic
and Slovakia >



The most accurate details of
the optimal composition of
received food >



Comprehensive nutrition and
exercise guide in your mobile >



Consultations with experts >

Today

Day

7 days

30 days

From - To

My profile



Saturday 04.07.



Dashboard

Caloric intake

Energy expenditure

My plan

Summary graph

Date of last weight update

04.07.2015

Current weight

98 kg

Target weight

90 kg

Required date of achieving target weight

31.10.2015

Recommended value of the energy balance to achieve a target weight

-2502 kJ



Save

Today

Day

7 days

30 days

From - To

My profile



Saturday 04.07.



Dashboard

Caloric intake

Energy expenditure

My plan

Summary graph



Licence management

08:00

10:00

12:00

15:00

18:00

Recommended value of the energy balance to achieve a target weight -2502 kJ

dinner

other

ENERGY INTAKE AND EXPENDITURE

Lack of energy

-3266 kJ

Excess energy

FOOD INTAKE COMPOSITION

79%

Liquids

50%

Carbs.

37%

Fats

13%

Proteins

83%

Fiber

70%

Sodium

Challenges for future

Academic sector (universities, research institutes, medical associations...) should be more active in:

- 🍀 better education of the population**
- 🍀 establishment of healthy lifestyle strategy**
- 🍀 better communication with massmedia**
- 🍀 persuding the politicians to make significant changes...**

Thank you

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