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Alimentazione ed esercizio fisico per la salute individuae e del pianeta

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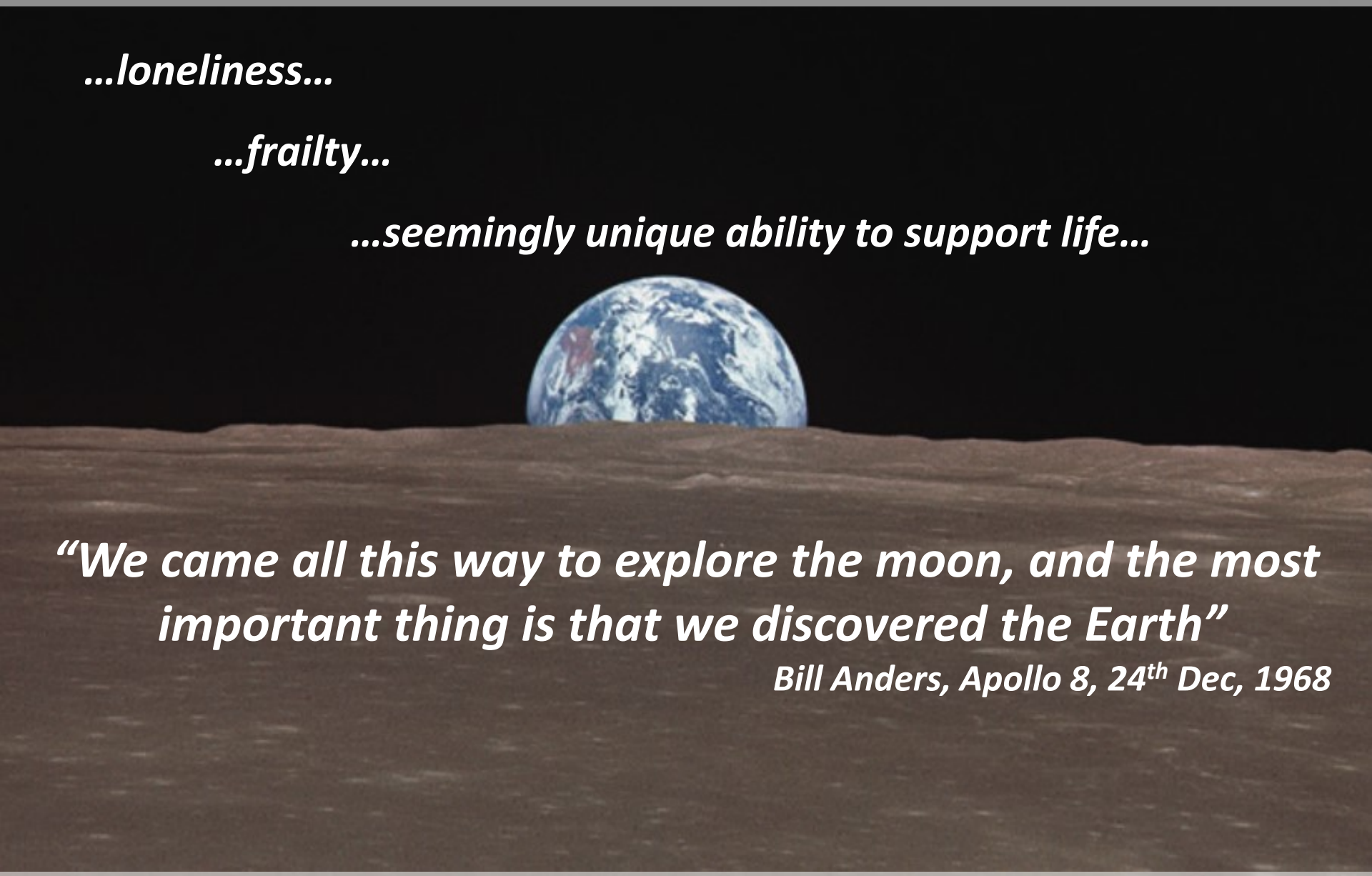
…loneliness…

…frailty…

…seemingly unique ability to support life…



"We came all this way to explore the moon, and the most important thing is that we discovered the Earth"

Bill Anders, Apollo 8, 24th Dec, 1968

Slow Medicine
Sobria Rispettosa Giusta
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POLICY PAPER

Written By:
David Spratt
& Ian Dunlop

Foreword By:
Admiral Chris Barrie
AC RAN Retired

Existential climate-related security risk:

A scenario approach

According to the Global Challenges Foundation's *Global Catastrophic Risks 2018* report, even for 2˚C of warming, more than a billion people may need to be relocated due to sea-level rise, and In high-end scenarios "the scale of destruction is beyond our capacity to model, with a high likelihood of human civilisation coming to an end".[22]

"the scale of destruction is beyond our capacity to model, with a high likelihood of human civilisation coming to an end".[22]

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How would be Earth without human beings?

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*"I appeal to all people, everywhere, to raise their voice.
Speak out on behalf of this planet, our only home.
Let us care for Mother Earth so she can continue to care for us,
as she has done for millennia."* [1]

[1] *Ban Ki-moon, United Nations Secretary General*

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ESC European Society of Cardiology
European Heart Journal (2022) **43**, 2657–2659
https://doi.org/10.1093/eurheartj/ehab572

EDITORIAL

Call for emergency action to limit global temperature increases, restore biodiversity, and protect health

Wealthy nations must do much more, much faster†

JAMA Insights | CLIMATE CHANGE AND HEALTH

Introduction to *JAMA* Climate Change and Health Series

Kristie L. Ebi, PhD, MPH; Jeremy J. Hess, MD, MPH

EDITORIAL JAMA Cardiology Published online October 25, 2023

Time to Treat the Climate and Nature Crisis as One Indivisible Global Health Emergency

Kamran Abbasi; Parveen Ali; Virginia Barbour; Thomas Benfield; Kirsten Bibbins-Domingo; Stephen Hancocks; Richard Horton; Laurie Laybourn-Langton; Robert Mash; Peush Sahni; Wadeia Mohammad Sharief; Paul Yonga; Chris Zielinski

Medical News & Perspectives | CLIMATE CHANGE AND HEALTH

Critical Care Physician Takes on Climate Change in New WHO Role

Jennifer Abbasi

JAMA Published online September 6, 2023

ESC European Society of Cardiology
European Heart Journal (2022) **43**, 2435–2437
https://doi.org/10.1093/eurheartj/ehac110

CARDIOPULSE

Global Spotlights

Climate change and healthcare organizations: a call to arms

Yasaswini Iyer, Skanda Moorthy, Sadeer Al-Kindi, and Sanjay Rajagopalan*

ESC European Society of Cardiology
European Journal of Preventive Cardiology (2024) **31**, 128–130
https://doi.org/10.1093/eurjpc/zwad343

INVITED EDITORIAL

Health and the environment: messages for the cardiologist

Pier Mannuccio Mannucci*

Overdiagnosis is increasing the carbon footprint of healthcare

Tackling overdiagnosis takes on a new urgency in the context of a climate emergency

Alexandra Barratt,[1] Forbes McGain[2]

the bmj | *BMJ* 2021;375:n2407 | doi: 10.1136/bmj.n2407

Call for emergency action to limit global temperature increases, restore biodiversity, and protect health

www.thelancet.com **Vol 398 September 11, 2021**

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FOSSIL-FUEL POLLUTION AND CLIMATE CHANGE

Caren G. Solomon, M.D., M.P.H., *Editor*, Renee N. Salas, M.D., M.P.H., *Guest Editor*

Mandatory Reporting of Emissions to Achieve Net-Zero Health Care

Hardeep Singh, M.D., M.P.H., Matthew Eckelman, Ph.D., Donald M. Berwick, M.D., M.P.P., and Jodi D. Sherman, M.D.

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Perspective

COP27 Climate Change Conference — Urgent Action Needed for Africa and the World

Lukoye Atwoli, Gregory E. Erhabor, Aiah A. Gbakima, Abraham Haileamlak, Jean-Marie Kayembe Ntumba, James Kigera, Laurie Laybourn-Langton, Bob Mash, Joy Muhia, Fhumulani Mavis Mulaudzi, David Ofori-Adjei, Friday Okonofua, Arash Rashidian, Maha El-Adawy, Siaka Sidibé, Abdelmadjid Snouber, James Tumwine, Mohammad Sahar Yassien, Paul Yonga, Lilia Zakhama, and Chris Zielinski

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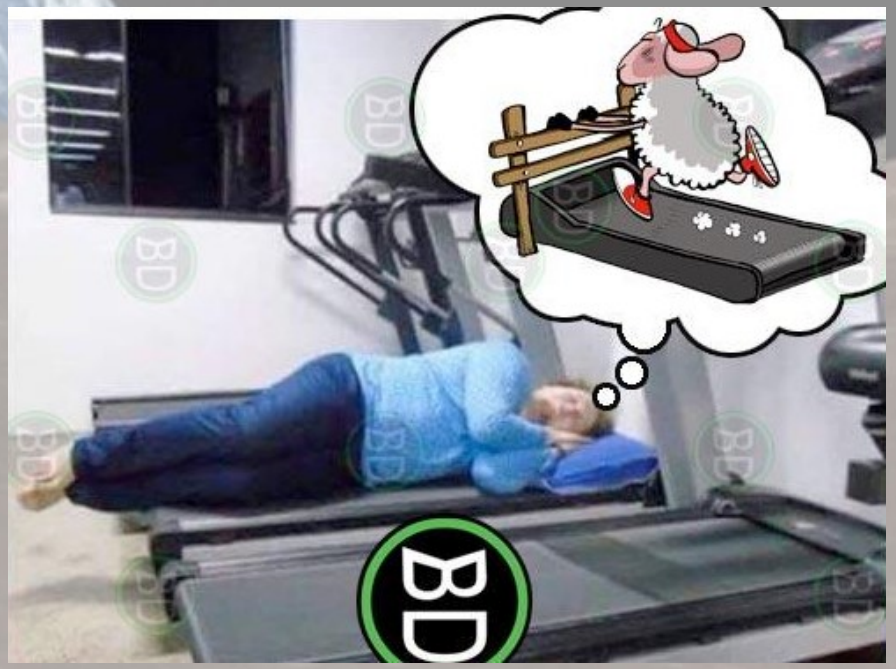
Chapter 1: Prevention fits everywhere

Food and physical activity from the point of view of health



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Diseases and Conditions

Heart failure

Basics | Care at Mayo Clinic | In-Depth | Expert Answers | Multimedia | Resources | News From

- Definition
- Symptoms
- Causes
- Risk factors
- Complications
- Preparing for your appointment
- Tests and diagnosis
- Treatments and drugs
- Lifestyle and home remedies
- Prevention

Prevention

By Mayo Clinic Staff

The key to preventing heart failure is to reduce your risk factors. You can control or eliminate many of the risk factors for heart disease — high blood pressure and coronary artery disease, for example — by making lifestyle changes along with the help of any needed medications.

Lifestyle changes you can make to help prevent heart failure include:

- Not smoking
- Controlling certain conditions, such as high blood pressure and diabetes
- Staying physically active
- Eating healthy foods
- Maintaining a healthy weight
- Reducing and managing stress

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- Lifestyle and home remedies
- Alternative medicine
- Coping and support
- Prevention

Prevention

By Mayo Clinic Staff

Type 1 diabetes can't be prevented. However, the same healthy lifestyle choices that help treat prediabetes, type 2 diabetes and gestational diabetes can also help prevent them:

- **Eat healthy foods.** Choose foods lower in fat and calories and higher in fiber. Focus on fruits, vegetables and whole grains. Strive for variety to prevent boredom.
- **Get more physical activity.** Aim for 30 minutes of moderate physical activity a day. Take a brisk daily walk. Ride your bike. Swim laps. If you can't fit in a long workout, break it up into smaller sessions spread throughout the day.
- **Lose excess pounds.** If you're overweight, losing even 7 percent of your body weight — for example, 14 pounds (6.4 kilograms) if you weigh 200 pounds (90.9 kilograms) — can reduce the risk of diabetes. To keep your weight in a healthy range, focus on permanent changes to your eating and exercise habits. Motivate yourself by remembering the benefits of losing weight, such as a healthier heart, more energy and improved self-esteem.

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- Reducing and managing stress

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Patient Care & Health Information › Diseases & Conditions

COPD

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Self-management

By Mayo Clinic Staff

Print

If you have COPD, you can take steps to feel better and slow the damage to your lungs:

- **Control your breathing.** Talk to your doctor or respiratory therapist about techniques for breathing more efficiently throughout the day. Also be sure to discuss breathing positions and relaxation techniques that you can use when you're short of breath.
- **Clear your airways.** With COPD, mucus tends to collect in your air passages and can be difficult to clear. Controlled coughing, drinking plenty of water and using a humidifier may help.
- **Exercise regularly.** It may seem difficult to exercise when you have trouble breathing, but regular exercise can improve your overall strength and endurance and strengthen your respiratory muscles. Discuss with your doctor which activities are appropriate for you.
- **Eat healthy foods.** A healthy diet can help you maintain your strength. If you're underweight, your doctor may recommend nutritional supplements. If you're overweight, losing weight can significantly help your breathing, especially during times of exertion.
- **Avoid smoke and air pollution.** In addition to quitting smoking, it's important to avoid places where others smoke. Secondhand smoke may contribute to further lung damage. Other types of air pollution also can irritate your lungs.

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Acute kidney failure

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Complications
Preparing for your appointment
Tests and diagnosis
Treatments and drugs
Lifestyle and home remedies
Prevention

Products and services

Prevention

By Mayo Clinic Staff

Acute kidney failure is often difficult to predict or prevent. But you may reduce your risk by taking care of your kidneys. Try to:

- **Pay attention to labels when taking over-the-counter (OTC) pain medications.** Follow the instructions for OTC pain medications, such as aspirin, acetaminophen (Tylenol, others) and ibuprofen (Advil, Motrin IB, others). Taking too much of these medications may increase your risk of acute kidney failure. This is especially true if you have pre-existing kidney disease, diabetes or high blood pressure.
- **Work with your doctor to manage kidney problems.** If you have kidney disease or another condition that increases your risk of acute kidney failure, such as diabetes or high blood pressure, stay on track with treatment goals and follow your doctor's recommendations to manage your condition.
- **Make a healthy lifestyle a priority.** Be active; eat a sensible, balanced diet; and drink alcohol only in moderation — if at all.

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COPD

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Self-management

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Cancer

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- Coping and support
- Prevention

Products and services

The Mayo Clinic Diet

What is your weight-loss goal?

Prevention

By Mayo Clinic Staff

There's no certain way to prevent cancer. But doctors have identified several ways of reducing your cancer risk, such as:

- **Stop smoking.** If you smoke, quit. If you don't smoke, don't start. Smoking is linked to several types of cancer — not just lung cancer. Stopping now will reduce your risk of cancer in the future.
- **Avoid excessive sun exposure.** Harmful ultraviolet (UV) rays from the sun can increase your risk of skin cancer. Limit your sun exposure by staying in the shade, wearing protective clothing or applying sunscreen.
- **Eat a healthy diet.** Choose a diet rich in fruits and vegetables. Select whole grains and lean proteins.
- **Exercise most days of the week.** Regular exercise is linked to a lower risk of cancer. Aim for at least 30 minutes of exercise most days of the week. If you haven't been exercising regularly, start out slowly and work your way up to 30 minutes or longer.
- **Maintain a healthy weight.** Being overweight or obese may increase your risk of cancer. Work to achieve and maintain a healthy weight through a combination of a healthy diet and regular exercise.

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doi:10.1093/eurheartj/ehz501

Prevention Guidelines: Does one size fit all?

Discussion of the 2019 ACC/AHA Primary Prevention of Cardiovascular Disease Guidelines

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Sobria Rispettosa Giusta

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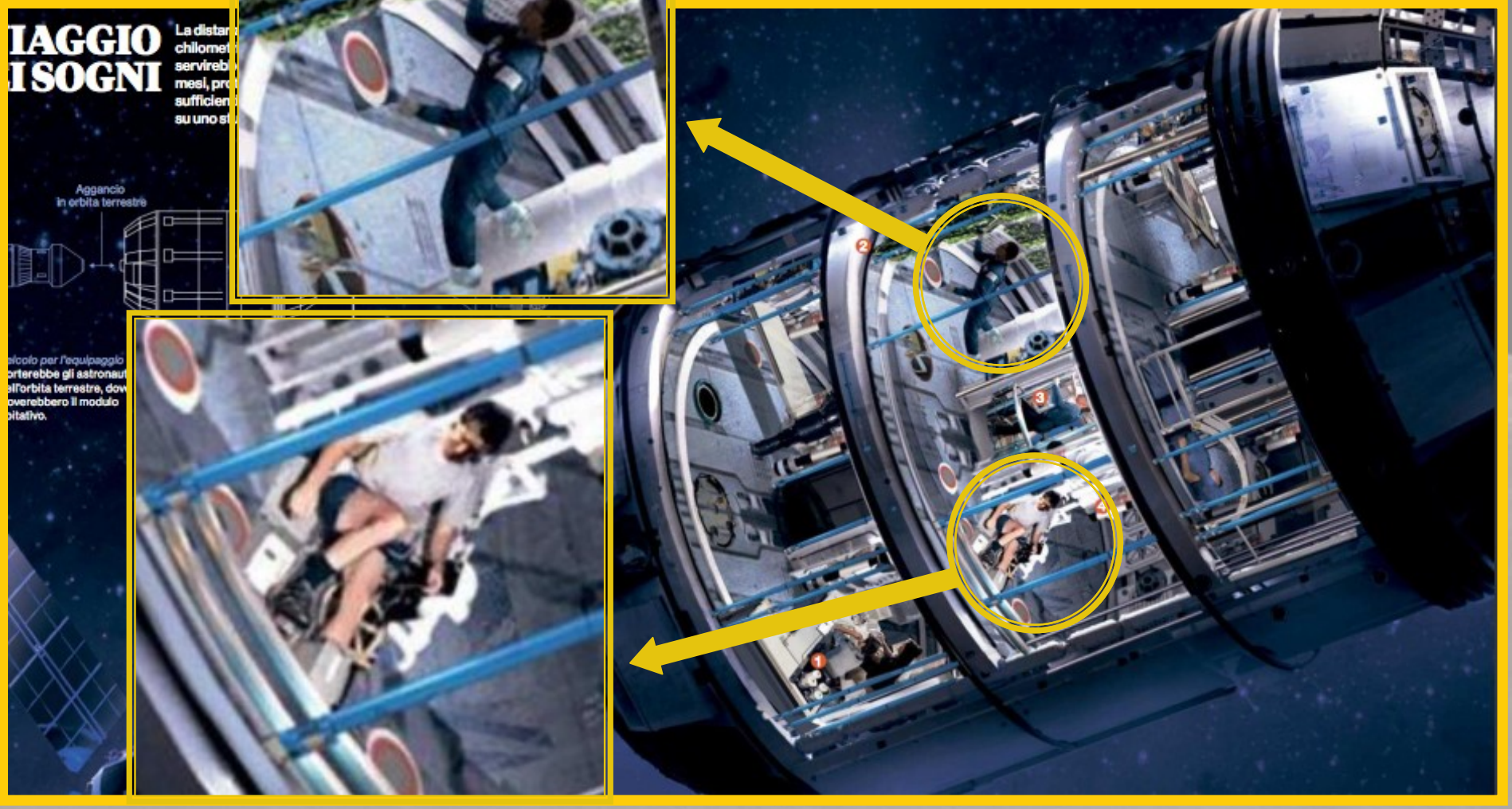

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Circulation

American Heart Association

Dietary and Policy Priorities for Cardiovascular Disease, Diabetes, and Obesity: A Comprehensive Review

Dariush Mozaffarian

Circulation. 2016;133:187-225; originally published online January 8, 2016;
doi: 10.1161/CIRCULATIONAHA.115.018585

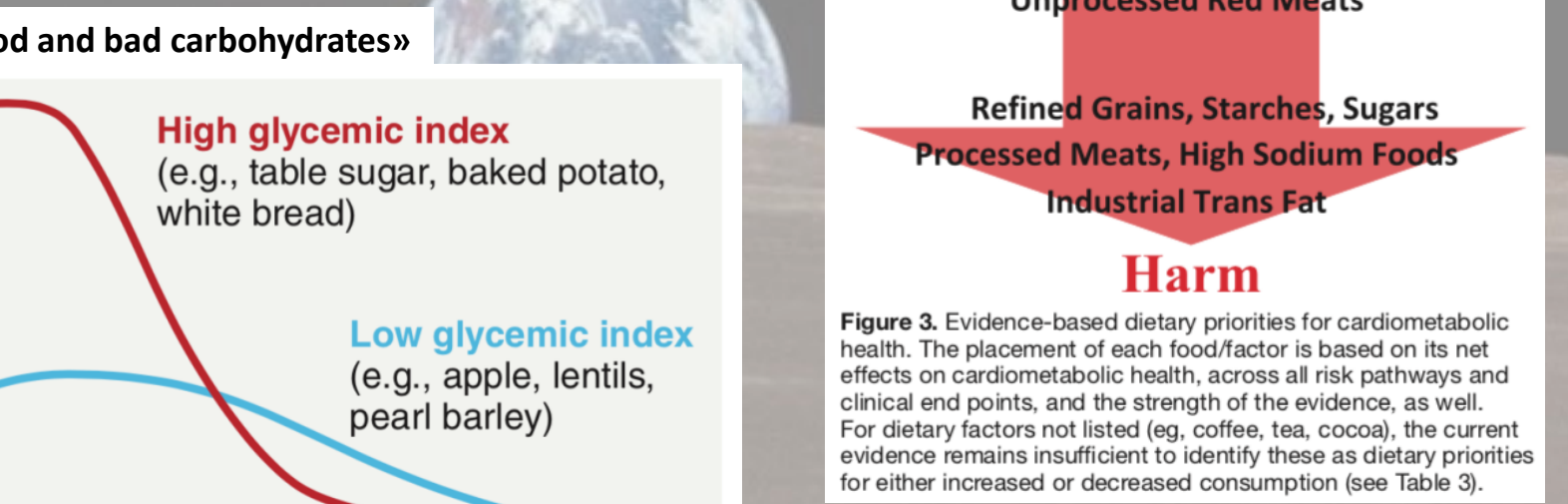
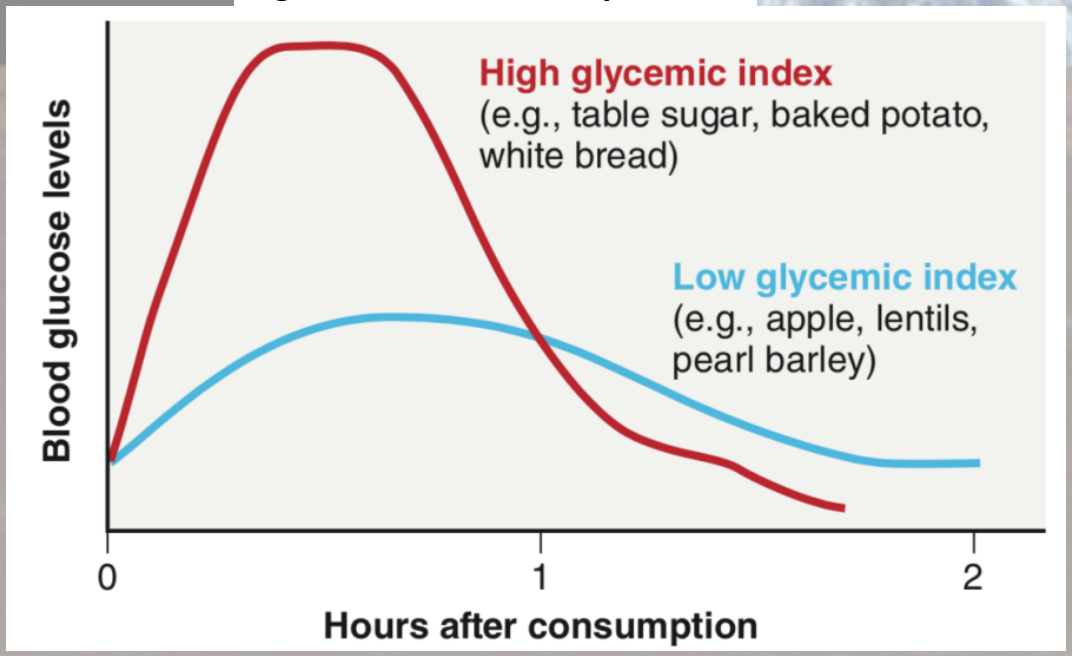


Figure 3. Evidence-based dietary priorities for cardiometabolic health. The placement of each food/factor is based on its net effects on cardiometabolic health, across all risk pathways and clinical end points, and the strength of the evidence, as well. For dietary factors not listed (eg, coffee, tea, cocoa), the current evidence remains insufficient to identify these as dietary priorities for either increased or decreased consumption (see Table 3).

«good and bad carbohydrates»



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International Agency for Research on Cancer

World Health Organization

PRESS RELEASE
N° 240

26 October 2015

IARC Monographs evaluate consumption of red meat and processed meat

Lyon, France, 26 October 2015 – The International Agency for Research on Cancer (IARC), the cancer agency of the World Health Organization, has evaluated the carcinogenicity of the consumption of red meat and processed meat.

Red meat

After thoroughly reviewing the accumulated scientific literature, a Working Group of 22 experts from 10 countries convened by the IARC Monographs Programme classified the consumption of red meat as *probably carcinogenic to humans* (Group 2A), based on *limited evidence* that the consumption of red meat causes cancer in humans and *strong* mechanistic evidence supporting a carcinogenic effect.

This association was observed mainly for colorectal cancer, but associations were also seen for pancreatic cancer and prostate cancer.

Processed meat

Processed meat was classified as *carcinogenic to humans* (Group 1), based on *sufficient evidence* in humans that the consumption of processed meat causes colorectal cancer.

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Plant-Based Diets Are Associated With a Lower Risk of Incident Cardiovascular Disease, Cardiovascular Disease Mortality, and All-Cause Mortality in a General Population of Middle-Aged Adults

Hyunju Kim, PhD; Laura E. Caulfield, PhD; Vanessa Garcia-Larsen, PhD; Lyn M. Steffen, PhD; Josef Coresh, MD, PhD; Casey M. Rebholz, PhD

American Heart Association.

Background—Previous studies have documented the cardiometabolic health benefits of plant-based diets; however, these studies were conducted in selected study populations that had narrow generalizability.

Methods and Results—We used data from a community-based cohort of middle-aged adults (n=12 168) in the ARIC (Atherosclerosis Risk in Communities) study who were followed up from 1987 through 2016. Participants' diet was classified using 4 diet indexes. In the overall plant-based diet index and provegetarian diet index, higher intakes of all or selected plant foods received higher scores; in the healthy plant-based diet index, higher intakes of only the healthy plant foods received higher scores; in the less healthy plant-based diet index, higher intakes of only the less healthy plant foods received higher scores. In all indexes, higher intakes of animal foods received lower scores. Results from Cox proportional hazards models showed that participants in the highest versus lowest quintile for adherence to overall plant-based diet index or provegetarian diet had a 16%, 31% to 32%, and 18% to 25% lower risk of cardiovascular disease, cardiovascular disease mortality, and all-cause mortality, respectively, after adjusting for important confounders (all $P<0.05$ for trend). Higher adherence to a healthy plant-based diet index was associated with a 19% and 11% lower risk of cardiovascular disease mortality and all-cause mortality, respectively, but not incident cardiovascular disease ($P<0.05$ for trend). No associations were observed between the less healthy plant-based diet index and the outcomes.

Conclusions—Diets higher in plant foods and lower in animal foods were associated with a lower risk of cardiovascular morbidity and mortality in a general population. (***J Am Heart Assoc.*** **2019;8:e012865. DOI: 10.1161/JAHA.119.012865.)**

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JAMA Internal Medicine | Original Investigation

Association of Animal and Plant Protein Intake With All-Cause and Cause-Specific Mortality in a Japanese Cohort

Sanjeev Budhathoki, PhD; Norie Sawada, MD, PhD; Motoki Iwasaki, MD, PhD; Taiki Yamaji, MD, PhD; Atsushi Goto, MD, PhD; Ayaka Kotemori, RD, PhD; Junko Ishihara, RD, PhD; Ribeka Takachi, RD, PhD; Hadrien Charvat, MD, PhD; Tetsuya Mizoue, MD, PhD; Hiroyasu Iso, MD, PhD; Shoichiro Tsugane, MD, PhD; for the Japan Public Health Center–based Prospective Study Group

JAMA Intern Med. doi:10.1001/jamainternmed.2019.2806
Published online August 26, 2019.

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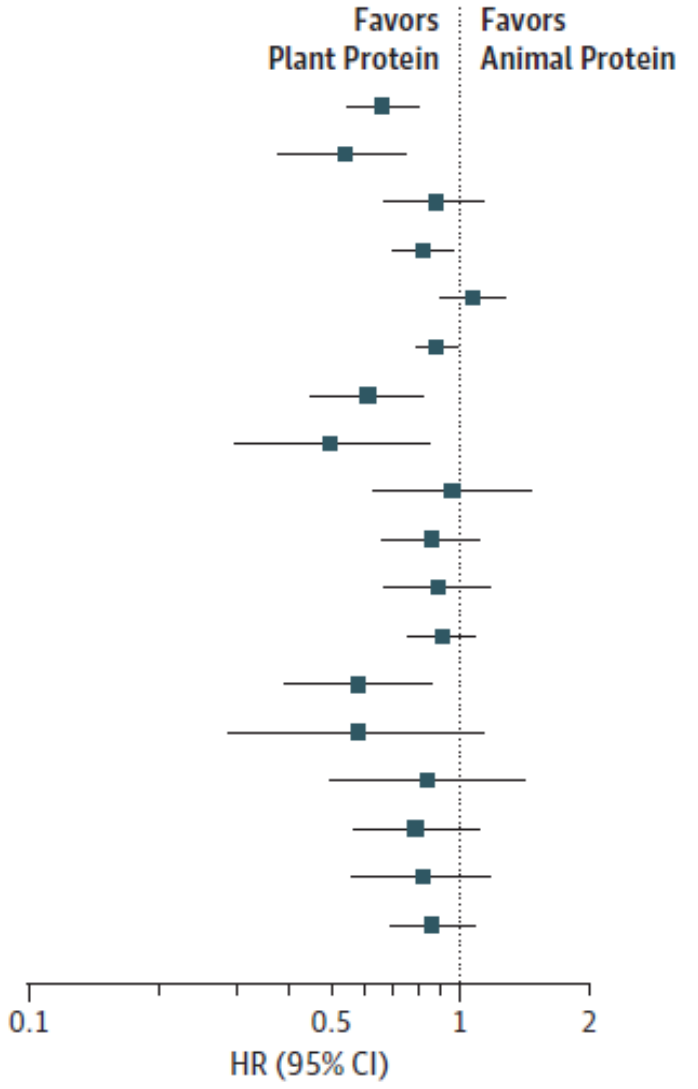
JAMA Internal Medicine | Original Investigation

Association of Animal and Plant Protein Intake With All-Cause and Cause-Specific Mortality in a Japanese Cohort

Sanjeev Bu
Atsushi Go
Hadrien Ch
for the Jap

Figure 1. Hazard Ratios (HRs) for Mortality Associated With Isocaloric Substitution of 3% Energy From Plant Protein for Animal Protein From Various Sources

Cause of Death	Protein Source	HR (95% CI)
All-cause	Red meat	0.66 (0.55-0.80)
	Processed meat	0.54 (0.38-0.75)
	Chicken	0.88 (0.67-1.14)
	Egg	0.82 (0.70-0.97)
	Dairy	1.07 (0.90-1.28)
	Fish	0.88 (0.79-0.99)
Cancer	Red meat	0.61 (0.45-0.82)
	Processed meat	0.50 (0.30-0.85)
	Chicken	0.96 (0.63-1.47)
	Egg	0.86 (0.66-1.11)
	Dairy	0.89 (0.67-1.18)
	Fish	0.91 (0.76-1.08)
Cardiovascular disease	Red meat	0.58 (0.39-0.86)
	Processed meat	0.58 (0.29-1.14)
	Chicken	0.84 (0.50-1.42)
	Egg	0.79 (0.57-1.11)
	Dairy	0.82 (0.56-1.18)
	Fish	0.86 (0.69-1.08)



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Circulation

Timothy J. Key, DPhil
et al

ORIGINAL RESEARCH ARTICLE

Consumption of Meat, Fish, Dairy Products, and Eggs and Risk of Ischemic Heart Disease

A Prospective Study of 7198 Incident Cases Among 409 885 Participants in the Pan-European EPIC Cohort

- We followed up the health of 400 000 men and women in 9 European countries for 12 years to examine the relevance of intake of animal foods to the pathogenesis of ischemic heart disease.
- Higher consumption of red and processed meat was positively associated with the risk for ischemic heart disease.
- Consumption of the other animal foods examined was not positively associated with risk; intakes of fatty fish, yogurt, cheese, and eggs were modestly inversely associated with risk.

Mutually-adjusted hazard ratios (95% CI) for first non-fatal MI or fatal IHD per increment in statistically calibrated intake of selected animal foods

Food	Increment (g/day)	No. of cases	HR (95% CI)	P for trend
Red and processed meat	100	7198	1.19 (1.06-1.33)	0.003
Poultry meat	20	7198	0.99 (0.94-1.04)	0.68
White fish	15	7198	1.01 (0.97-1.04)	0.72
Fatty fish	15	7198	0.96 (0.92-1.01)	0.091
Milk	200	7198	1.02 (0.99-1.06)	0.18
Yogurt	100	7198	0.93 (0.89-0.98)	0.007
Cheese	30	7198	0.92 (0.86-0.98)	0.010
Eggs	20	7198	0.93 (0.88-0.99)	0.023

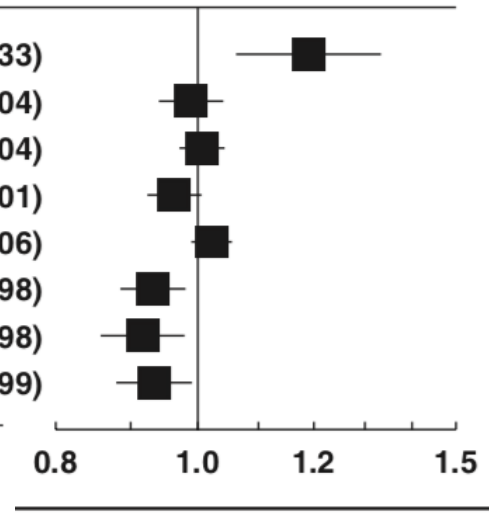

Figure. Mutually adjusted hazard ratios (HRs; 95% CIs) for first nonfatal myocardial infarction or fatal ischemic heart disease per increment in statistically calibrated intake of animal foods.
HRs are adjusted for age (continuous), smoking status and number of cigarettes per day, history of diabetes mellitus, previous hypertension, prior hyperlipidemia, Cambridge physical activity index, employment status, level of education completed, body mass (all categorical, with unknown categories added), current alcohol consumption (nondrinkers and sex-specific fifths of intake among drinkers), and calibrated intakes of energy, fruit, and vegetables combined, sugars (as percent energy), fiber from cereals, and each other food (each continuous), and stratified in the analysis by sex and EPIC (European Prospective Investigation Into Cancer and Nutrition) center. HR indicates hazard ratio; IHD, ischemic heart disease; and MI, myocardial infarction.

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Association of changes in red meat consumption with total and cause specific mortality among US women and men: two prospective cohort studies

Yan Zheng,[1,3] Yanping Li,[3] Ambika Satija,[3] An Pan,[4] Mercedes Sotos-Prieto,[3,5,6,7] Eric Rimm,[3,8,9] Walter C Willett,[3,8,9] Frank B Hu[3,8,9]

the bmj | *BMJ* 2019;365:l2110 | doi: 10.1136/bmj.l2110

14 019 deaths occurred during 1.2 million person years of follow-up. Increases in red meat consumption over eight years were associated with a higher mortality risk in the subsequent eight years among women and men (both P for trend<0.05, P for heterogeneity=0.97). An increase in total red meat consumption of at least half a serving per day was associated with a 10% higher mortality risk (pooled hazard ratio 1.10, 95% confidence interval 1.04 to 1.17). For processed and unprocessed red meat consumption, an increase of at least half a serving per day was associated with a 13% higher mortality risk (1.13, 1.04 to 1.23) and a 9% higher mortality risk (1.09, 1.02 to 1.17), respectively. A decrease in consumption of processed or unprocessed red meat of at least half a serving per day was not associated with mortality risk. The association between increased red meat consumption and mortality risk was consistent across subgroups defined by age, physical activity, dietary quality, smoking status, or alcohol consumption.

WHAT IS ALREADY KNOWN ON THIS TOPIC

Higher consumption of red meat has been associated with an increased risk of chronic diseases and premature death

Evidence is lacking about how changes in red meat consumption over time influence mortality, or what kind of alternative food choices would benefit health

WHAT THIS STUDY ADDS

Increases in red meat consumption, especially processed meat, were associated with a higher risk of death

Decreases in red meat consumption and simultaneous increases in healthy alternative food choices over time were associated with a lower mortality risk

Further evidence supports the health benefits of replacing red and processed meat consumption with healthy protein sources, whole grains, or vegetables

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ESC European Society of Cardiology
European Heart Journal (2018)
doi:10.1093/eurheartj/ehy799
CLINICAL RESEARCH
Prevention and epidemiology

Impact of chronic dietary red meat, white meat, or non-meat protein on trimethylamine N-oxide metabolism and renal excretion in healthy men and women

Zeneng Wang[1†], Nathalie Bergeron[2,3†], Bruce S. Levison[1], Xinmin S. Li[1], Sally Chiu[2], Xun Jia[1], Robert A. Koeth[1,4], Lin Li[1], Yuping Wu[5], W.H. Wilson Tang[1,4], Ronald M. Krauss[2], and Stanley L. Hazen[1,4]*

The red and the white, and the difference it makes

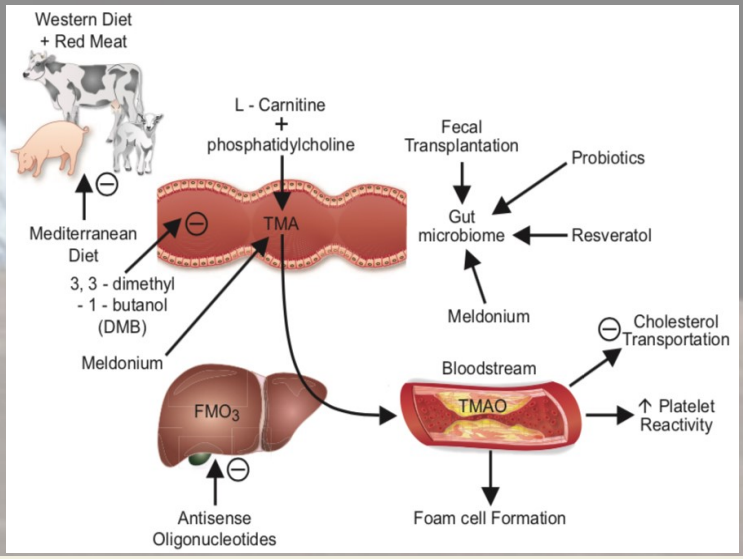
Allan Davies[1,2] and Thomas F. Lüscher[1,2,3]*

EDITORIAL

ESC European Society of Cardiology
European Heart Journal (2023) **44**, 1619–1621
https://doi.org/10.1093/eurheartj/ehad104
EDITORIAL

They eat what we eat, they digest what we ingest

Thomas F. Lüscher [1,2]*



Aims Carnitine and choline are major nutrient precursors for gut microbiota-dependent generation of the atherogenic metabolite, trimethylamine N-oxide (TMAO). We performed randomized-controlled dietary intervention studies to explore the impact of chronic dietary patterns on TMAO levels, metabolism and renal excretion.

Conclusion Chronic dietary red meat increases systemic TMAO levels through: (i) enhanced dietary precursors; (ii) increased microbial TMA/TMAO production from carnitine, but not choline; and (iii) reduced renal TMAO excretion. Discontinuation of dietary red meat reduces plasma TMAO within 4 weeks.

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Intestinal Microbiota in Cardiovascular Health and Disease

JACC State-of-the-Art Review

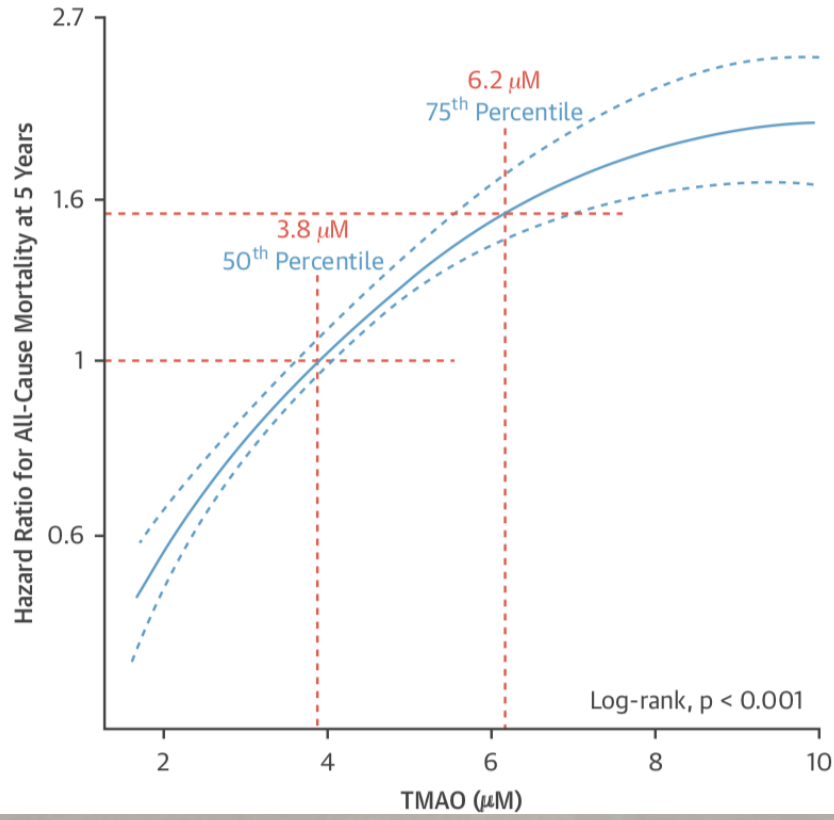
W.H. Wilson Tang, MD,[a,b,c] Fredrik Bäckhed, PhD,[d,e] Ulf Landmesser, MD,[f] Stanley L. Hazen, MD[a,b]

J Am Coll Cardiol 2019;73:2089-105

HIGHLIGHTS

- Intestinal microbiota are mechanistically linked to physiological processes that affect cardiovascular health.
- Dietary nutrients serve as key environmental influences to intestinal microbiota and human host metabolism.
- Modulating intestinal microbiota composition and metabolism may serve as targets for cardiovascular disease prevention.

FIGURE 3 Relationship Between Plasma Levels of TMAO and All-Cause Mortality in Stable Cardiac Patients



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The red and the white, and the difference it makes

Allan Davies[1,2] and Thomas F. Lüscher[1,2,3]*

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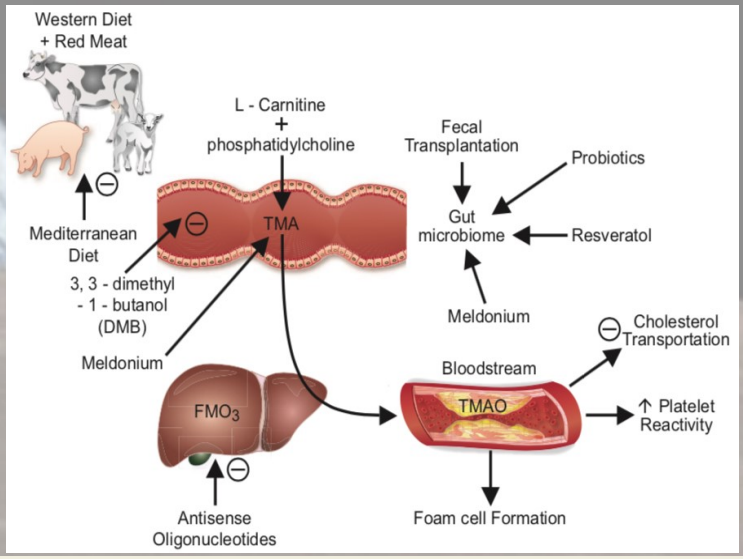
EDITORIAL

They eat what we eat, they digest what we ingest

Thomas F. Lüscher [1,2]*



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Original Investigation | Nutrition, Obesity, and Exercise

Cardiometabolic Effects of Omnivorous vs Vegan Diets in Identical Twins
A Randomized Clinical Trial

Matthew J. Landry, PhD, RDN; Catherine P. Ward, PhD, RD; Kristen M. Cunanan, PhD; Lindsay R. Durand, MPH, RD; Dalia Perelman, MS, RDN; Jennifer L. Robinson, PhD; Tayler Hennings, MPH; Linda Koh, PhD, MS, RN; Christopher Dant, PhD; Amanda Zeitlin, MPH; Emily R. Ebel, PhD; Erica D. Sonnenburg, PhD; Justin L. Sonnenburg, PhD; Christopher D. Gardner, PhD

JAMA Network Open. 2023;6(11):e2344457. doi:10.1001/jamanetworkopen.2023.44457

JAMA Network Open

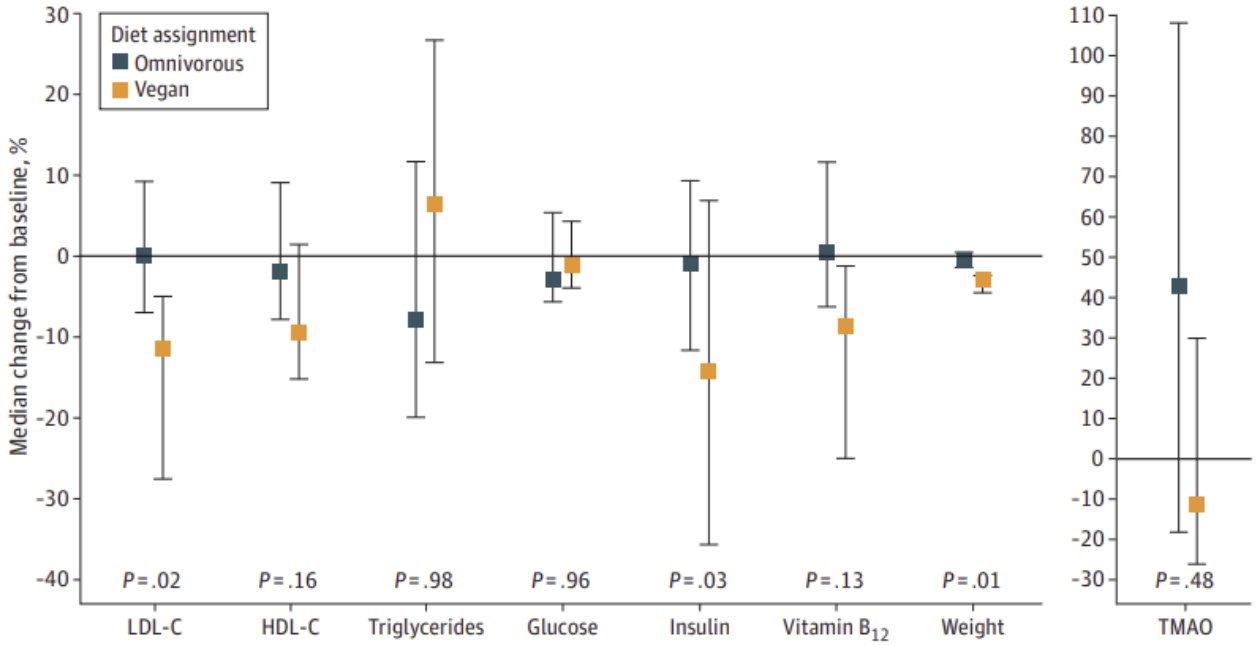
Key Points

Question What are the cardiometabolic effects of a healthy plant-based (vegan) vs a healthy omnivorous diet among identical twins during an 8-week intervention?

Findings In this randomized clinical trial of 22 healthy, adult, identical twin pairs, those consuming a healthy vegan diet showed significantly improved low-density lipoprotein cholesterol concentration, fasting insulin level, and weight loss compared with twins consuming a healthy omnivorous diet.

Meaning The findings from this trial suggest that a healthy plant-based diet offers a significant protective cardiometabolic advantage compared with a healthy omnivorous diet.

Figure 2. Median Change From Baseline to 8 Weeks in Primary and Secondary Outcomes Between Vegan and Omnivorous Diet Arms



CONCLUSIONS AND RELEVANCE In this randomized clinical trial of the cardiometabolic effects of omnivorous vs vegan diets in identical twins, the healthy vegan diet led to improved cardiometabolic outcomes compared with a healthy omnivorous diet. Clinicians can consider this dietary approach as a healthy alternative for their patients.

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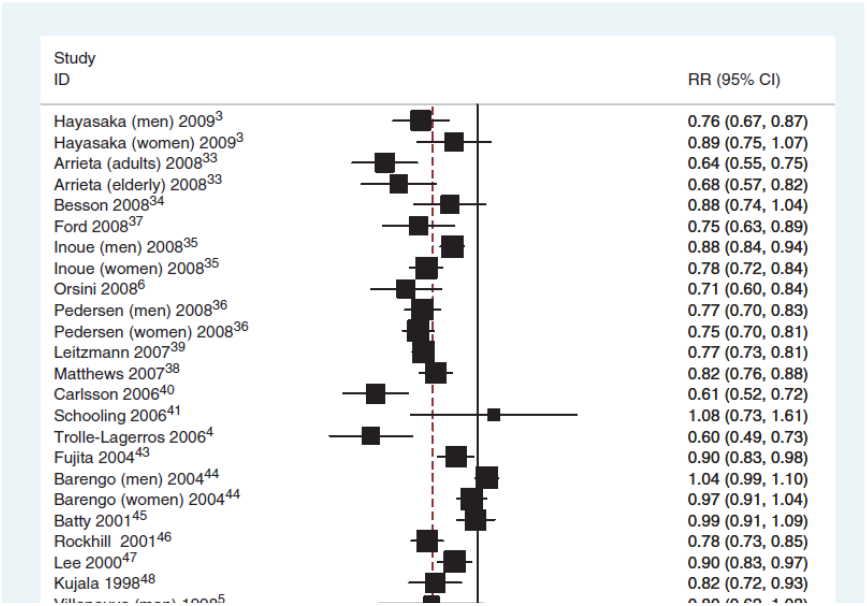
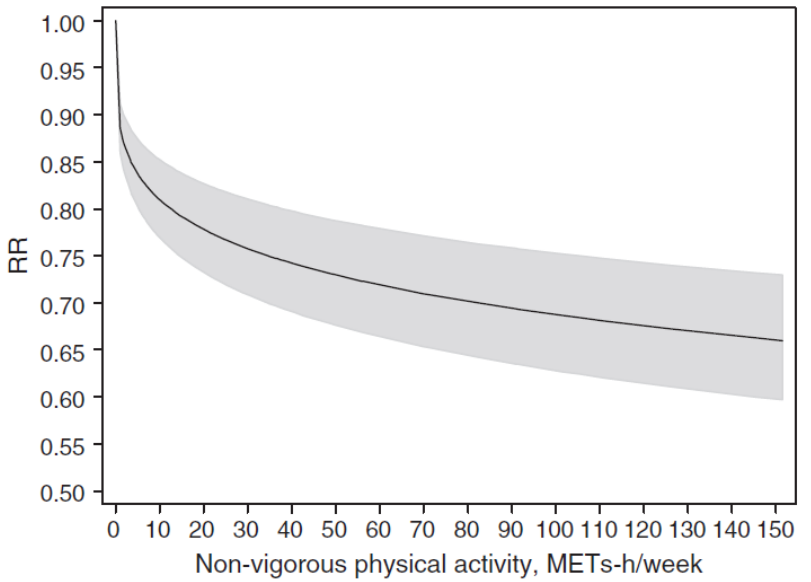
Non-vigorous physical activity and all-cause mortality: systematic review and meta-analysis of cohort studies

James Woodcock,[1]* Oscar H Franco,[2,3] Nicola Orsini[4] and Ian Roberts[1]

International Journal of Epidemiology 2011;**40**:121–138
doi:10.1093/ije/dyq104





- Physical activity reduces mortality. The greater the amount of activity the larger the mortality reduction. The greatest mortality reduction from increasing physical activity is found amongst the least active.
- We found that populations with low levels of activity 2.5 h/week of moderate intensity activity would achieve a 19% reduction in mortality. Increasing this to a 1 h session 7 days a week (7 h/week) of activity might increase the benefit to 24%.

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All-Cause Mortality Associated With Physical Activity During Leisure Time, Work, Sports, and Cycling to Work

Lars Bo Andersen, PhD, DMSc; Peter Schnohr, MD; Marianne Schroll, PhD, DMSc; Hans Ole Hein, MD

Arch Intern Med. 2000;160:1621-1628

Results: A total of 2881 women and 5668 men died. Compared with the sedentary, age- and sex-adjusted mortality rates in leisure time physical activity groups 2 to 4 were 0.68 (95% confidence interval, 0.64-0.71), 0.61 (95% confidence interval, 0.57-0.66), and 0.53 (95% confidence interval, 0.41-0.68), respectively, with no difference between sexes and age groups. Within the moderately and highly active persons, sports participants experienced only half the mortality of nonparticipants. Bicycling to work decreased risk of mortality in approximately 40% after multivariate adjustment, including leisure time physical activity.

Conclusions: Leisure time physical activity was inversely associated with all-cause mortality in both men and women in all age groups. Benefit was found from moderate leisure time physical activity, with further benefit from sports activity and bicycling as transportation.

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Using alternatives to the car and risk of all-cause, cardiovascular and cancer mortality

Jenna Panter,[1,2] Oliver Mytton,[1,2] Stephen Sharp,[1] Søren Brage,[1] Steven Cummins,[3] Anthony A Laverty,[4] Katrien Wijndaele,[1] David Ogilvie[1,2]

Conclusions More active patterns of travel were associated with a reduced risk of incident and fatal CVD and all-cause mortality in adults. This is an important message for clinicians advising people about how to be physically active and reduce their risk of disease.

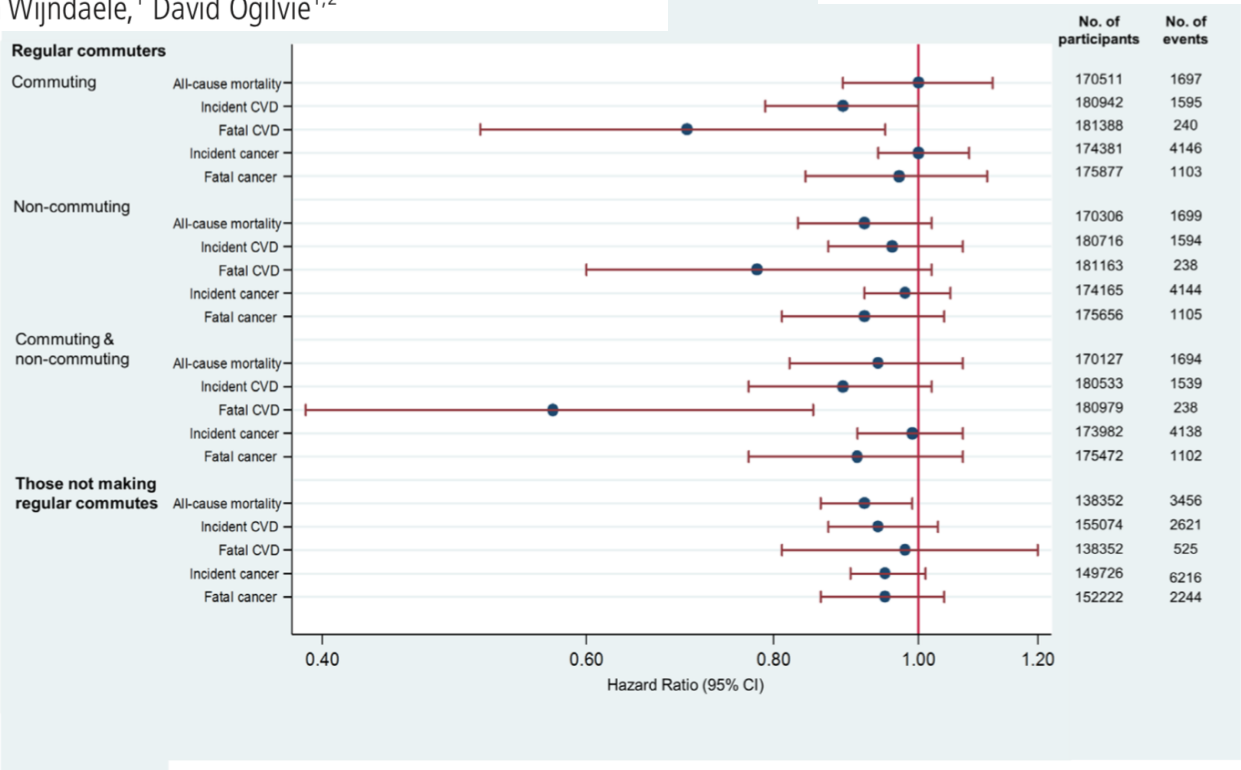

Figure 2 Maximally adjusted HRs for more active patterns of travel (compared with exclusive car use), and all-cause mortality, incident and fatal cardiovascular disease (CVD) and cancer for regular commuters and those not making regular commutes. The HR values for commuting and non-commuting travel are for commuters who use more active patterns of travel at least some of the time relative to commuters who rely exclusively on the car for both commuting and non-commuting travel.

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Physical activity trajectories and mortality: population based cohort study

Alexander Mok,[1] Kay-Tee Khaw,[2] Robert Luben,[2] Nick Wareham,[1] Soren Brage[1]

the bmj | *BMJ* 2019;365:l2323 | doi: 10.1136/bmj.l2323

Physical activity assessed at a single time point is associated with lower risks of mortality from all causes, cardiovascular disease, and cancer

Fewer studies have examined long term changes in physical activity and quantified the population health impact of different activity trajectories

Physical activity trajectory	Baseline PAEE (SD)	Most recent PAEE (SD)	No	Person years	Deaths	Adjusted mortality rate	Potential deaths averted (%)	Hazard ratio (95% CI)	Hazard ratio (95% CI)
Low									
Maintain	0 (0)	0 (0.4)	2207	23 613	842	2433	Reference		1.00
Increase	0 (0)	6.4 (3.2)	1127	13 270	210	1905	70 (10)		0.76 (0.65 to 0.88)
Medium									
Decrease	5.5 (1.6)	1.0 (1.9)	2606	29 727	709	2270	48 (7)		0.90 (0.81 to 1.00)
Maintain	5.5 (1.6)	5.3 (1.8)	1923	23 032	290	1811	143 (21)		0.72 (0.62 to 0.82)
Increase	5.5 (1.6)	10.0 (3.0)	1631	19 852	206	1583	169 (25)		0.62 (0.53 to 0.72)
High									
Decrease	11.9 (2.8)	5.0 (3.8)	2482	29 605	452	2081	104 (15)		0.80 (0.71 to 0.91)
Maintain	11.9 (2.8)	11.0 (2.7)	818	9987	81	1678	75 (11)		0.67 (0.53 to 0.84)
Increase	11.9 (2.8)	14.4 (3.1)	566	6988	50	1439	69 (10)		0.58 (0.43 to 0.78)

WHO minimum physical activity (PA) guidelines (150 mins/week of moderate-intensity PA) = PAEE of 5 kJ/kg/day
WHO recommendations for additional health benefits (300 mins/week of moderate-intensity PA) = PAEE of 10 kJ/kg/day

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Middle aged and older adults, including those with cardiovascular disease and cancer, stand to gain substantial longevity benefits by becoming more physically active, regardless of past activity levels, and changes in established risk factors, including overall diet quality, bodyweight, blood pressure, triglycerides, and cholesterol

At the population level, meeting and maintaining at least the minimum public health recommendations (150 minutes per week of moderate-intensity physical activity) would potentially prevent 46% of deaths associated with physical inactivity

Public health strategies should shift the population towards meeting the minimum recommendations, and importantly, focus on preventing declines in physical activity during middle and late life

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Brief Original Report

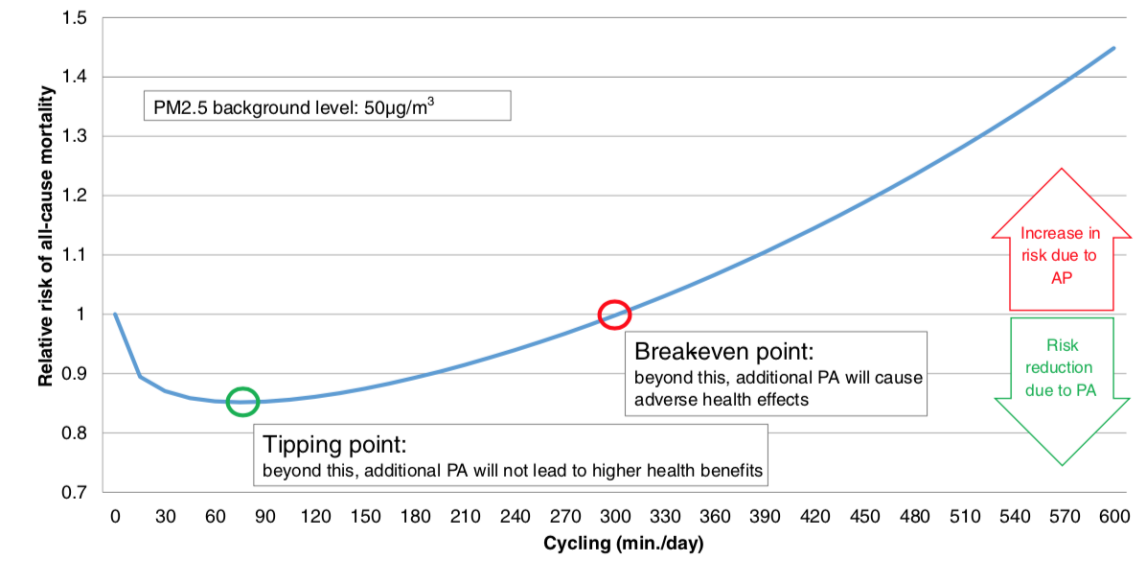
Can air pollution negate the health benefits of cycling and walking?

Marko Tainio [a,*], Audrey J. de Nazelle [b], Thomas Götschi [c], Sonja Kahlmeier [c], David Rojas-Rueda [c]
Mark J. Nieuwenhuijsen [d,e,f], Thiago Hérick de Sá [g], Paul Kelly [h], James Woodcock [a]

Preventive Medicine 87 (2016) 233–236

For the global average urban background $PM_{2.5}$ concentration (22 μg/m3) benefits of PA by far outweigh risks from air pollution even under the most extreme levels of active travel. In areas with $PM_{2.5}$ concentrations of 100 μg/m3, harms would exceed benefits after 1 h 30 min of cycling per day or more than 10 h of walking per day. If the counterfactual was driving, rather than staying at home, the benefits of PA would exceed harms from air pollution up to 3 h 30 min of cycling per day. The results were sensitive to dose–response function (DRF) assumptions for $PM_{2.5}$ and PA.

PA benefits of active travel outweighed the harm caused by air pollution in all but the most extreme air pollution concentrations.



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Chapter 2: what climate change has got to do with us?

Food and physical activity from an environmental point of view

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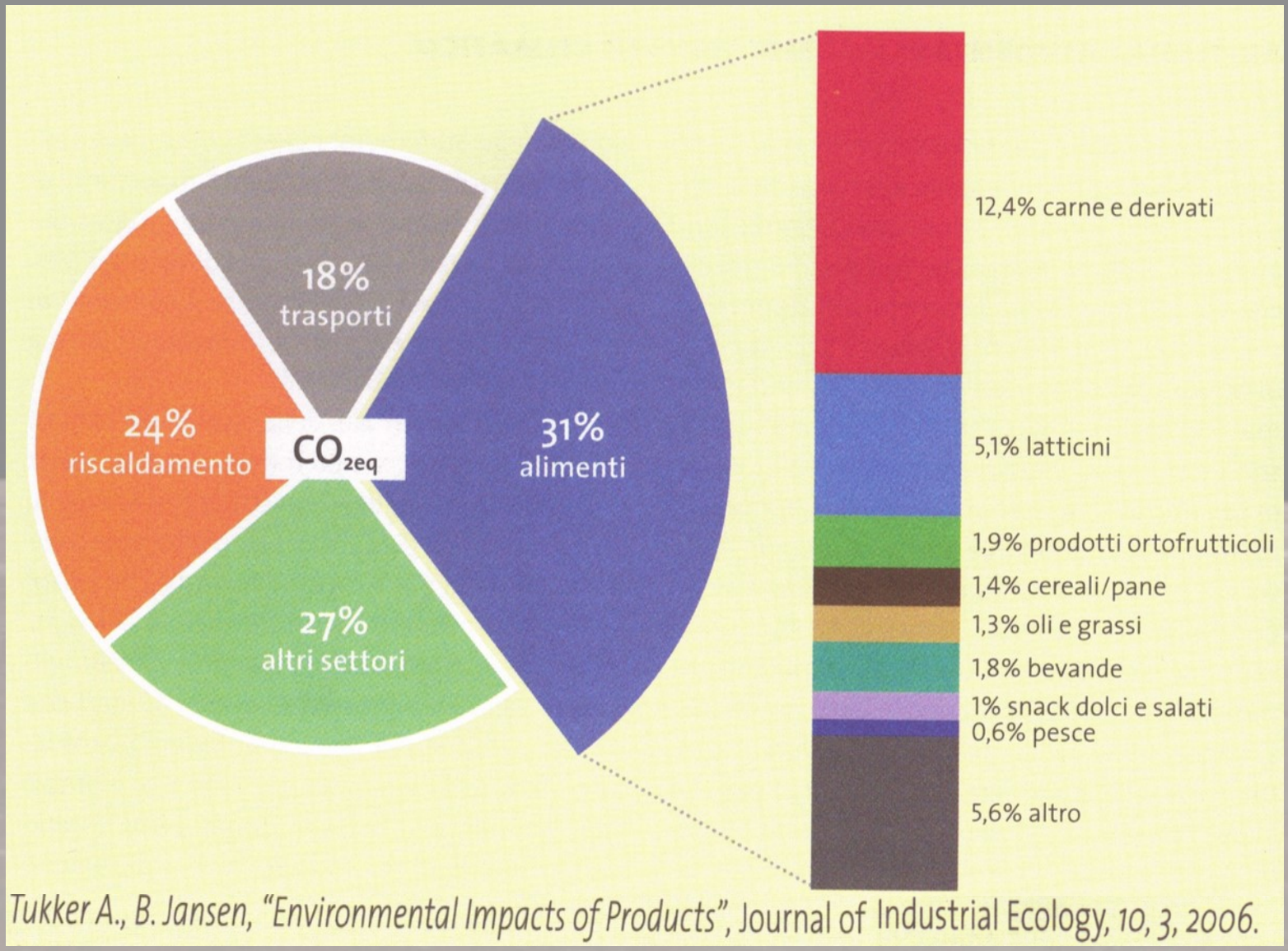

Tukker A., B. Jansen, "Environmental Impacts of Products", Journal of Industrial Ecology, 10, 3, 2006.

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livestock's long shadow

environmental issues and options

Land degradation

The livestock sector is by far the single largest anthropogenic user of land. The total area occupied by grazing is equivalent to 26 percent of the ice-free terrestrial surface of the planet. In addition, the total area dedicated to feedcrop production amounts to 33 percent of total arable land. In all, livestock production accounts for 70 percent of all agricultural land and 30 percent of the land surface of the planet.

Expansion of livestock production is a key factor in deforestation, especially in Latin America where the greatest amount of deforestation is occurring – 70 percent of previous forested land in the Amazon is occupied by pastures, and feedcrops cover a large part of the remainder. About 20 percent of the world's pastures and rangelands, with 73 percent of rangelands in dry areas, have been degraded to some extent, mostly through overgrazing, compaction and erosion created by livestock action. The dry lands in particular are affected

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livestock's long shadow

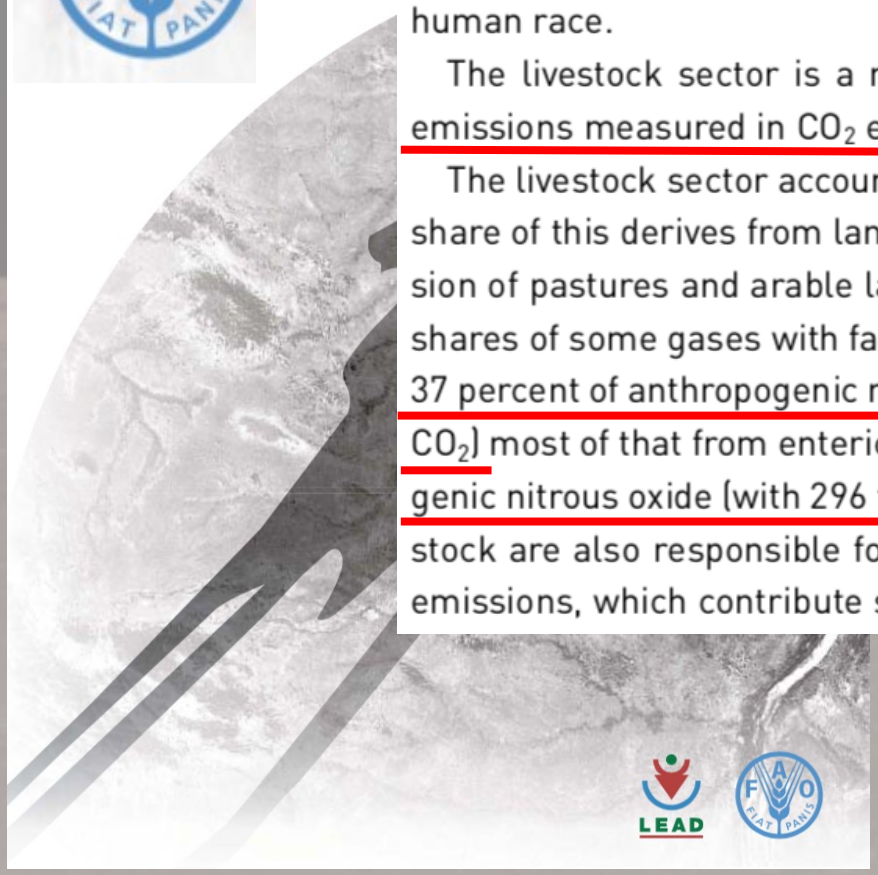
environmental issues and options

Atmosphere and climate

With rising temperatures, rising sea levels, melting icecaps and glaciers, shifting ocean currents and weather patterns, climate change is the most serious challenge facing the human race.

The livestock sector is a major player, responsible for 18 percent of greenhouse gas emissions measured in CO_2 equivalent. This is a higher share than transport.

The livestock sector accounts for 9 percent of anthropogenic CO_2 emissions. The largest share of this derives from land-use changes – especially deforestation – caused by expansion of pastures and arable land for feedcrops. Livestock are responsible for much larger shares of some gases with far higher potential to warm the atmosphere. The sector emits 37 percent of anthropogenic methane (with 23 times the global warming potential (GWP) of CO_2) most of that from enteric fermentation by ruminants. It emits 65 percent of anthropogenic nitrous oxide (with 296 times the GWP of CO_2), the great majority from manure. Livestock are also responsible for almost two-thirds (64 percent) of anthropogenic ammonia emissions, which contribute significantly to acid rain and acidification of ecosystems.



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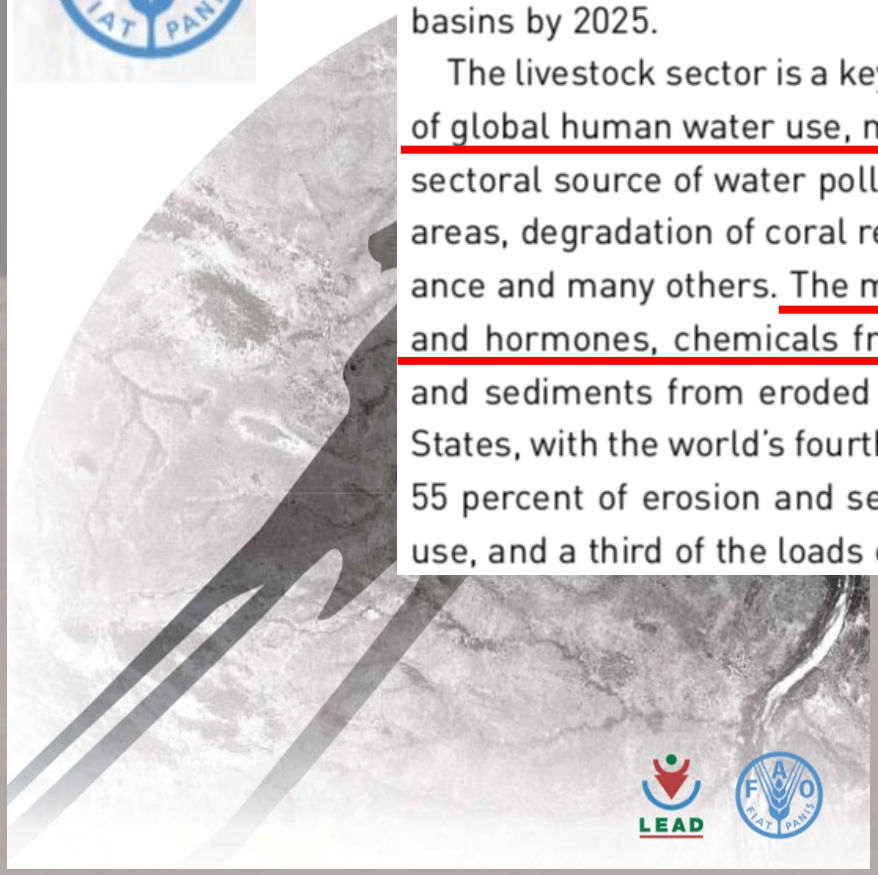
livestock's long shadow

environmental issues and options

Water

The world is moving towards increasing problems of freshwater shortage, scarcity and depletion, with 64 percent of the world's population expected to live in water-stressed basins by 2025.

The livestock sector is a key player in increasing water use, accounting for over 8 percent of global human water use, mostly for the irrigation of feedcrops. It is probably the largest sectoral source of water pollution, contributing to eutrophication, "dead" zones in coastal areas, degradation of coral reefs, human health problems, emergence of antibiotic resistance and many others. The major sources of pollution are from animal wastes, antibiotics and hormones, chemicals from tanneries, fertilizers and pesticides used for feedcrops, and sediments from eroded pastures. Global figures are not available but in the United States, with the world's fourth largest land area, livestock are responsible for an estimated 55 percent of erosion and sediment, 37 percent of pesticide use, 50 percent of antibiotic use, and a third of the loads of nitrogen and phosphorus into freshwater resources.



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livestock's long shadow

environmental issues and options

Biodiversity

We are in an era of unprecedented threats to biodiversity. The loss of species is estimated to be running 50 to 500 times higher than background rates found in the fossil record. Fifteen out of 24 important ecosystem services are assessed to be in decline.

Livestock now account for about 20 percent of the total terrestrial animal biomass, and the 30 percent of the earth's land surface that they now pre-empt was once habitat for wildlife. Indeed, the livestock sector may well be the leading player in the reduction of biodiversity, since it is the major driver of deforestation, as well as one of the leading drivers of land degradation, pollution, climate change, overfishing, sedimentation of coastal areas and facilitation of invasions by alien species. In addition, resource conflicts with pastoralists threaten species of wild predators and also protected areas close to pastures.

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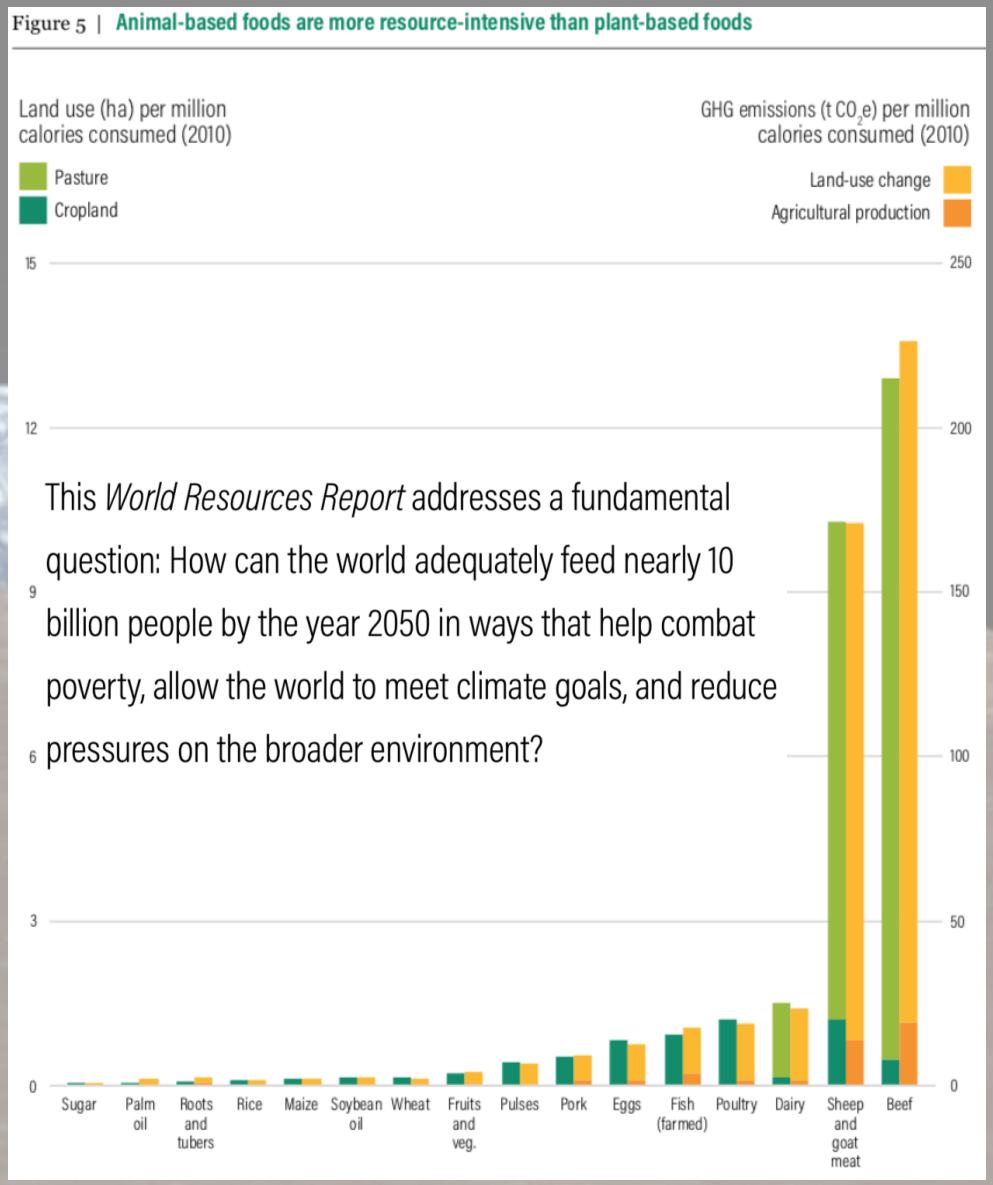

This *World Resources Report* addresses a fundamental question: How can the world adequately feed nearly 10 billion people by the year 2050 in ways that help combat poverty, allow the world to meet climate goals, and reduce pressures on the broader environment?

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Climate Risk Management 16 (2017) 145–163

Contents lists available at ScienceDirect

Climate Risk Management

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

Climate change and livestock: Impacts, adaptation, and mitigation

M. Melissa Rojas-Downing, A. Pouyan Nejadhashemi *, Timothy Harrigan, Sean A. Woznicki

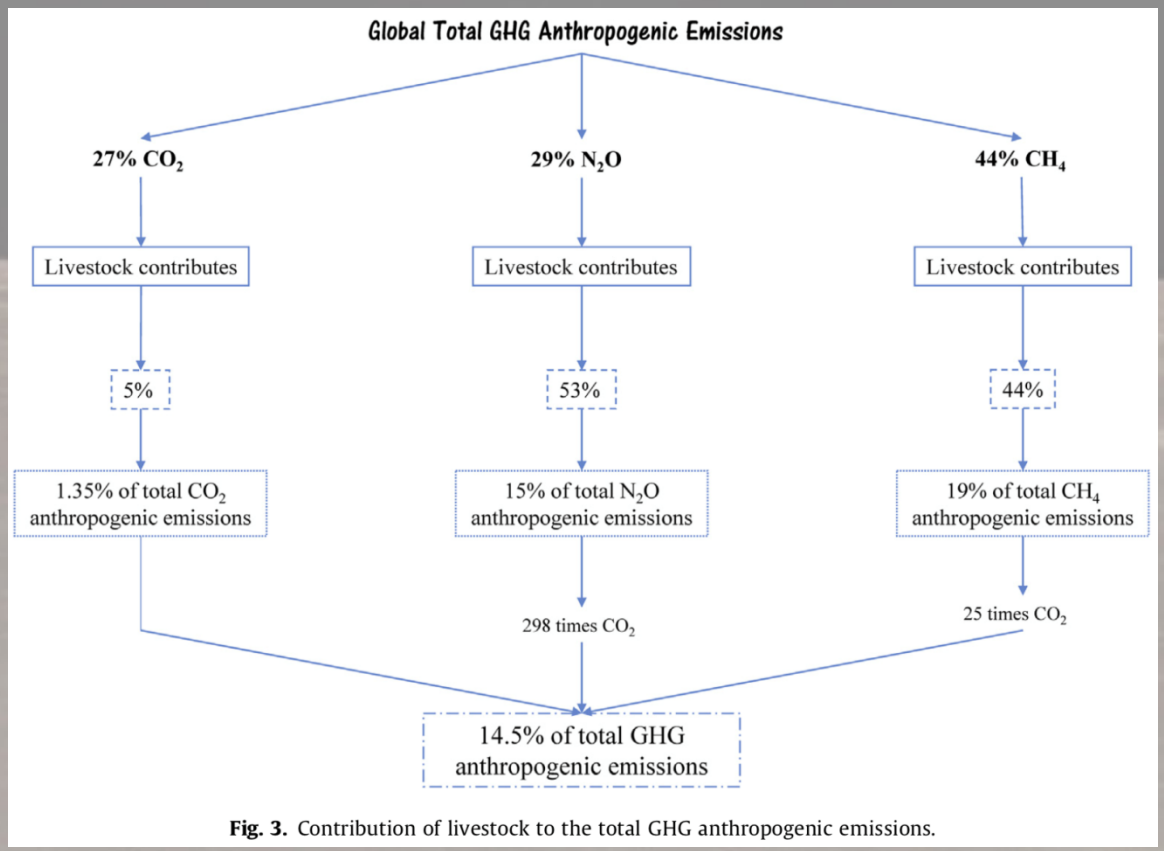

Fig. 3. Contribution of livestock to the total GHG anthropogenic emissions.

Slow Medicine
Sobria Rispettosa Giusta
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ITACARE-P ITALIAN ALLIANCE FOR CARDIOVASCULAR REHABILITATION AND PREVENTION
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Livestock and Climate Change

What if the key actors in climate change are...

cows, pigs, and chickens?

10 *World Watch* | November/December 2009 www.worldwatch.org

by Robert Goodland and Jeff Anhang

World Watch | November/December 2009

www.worldwatch.org

The FAO counts emissions attributable to changes in land use due to the introduction of livestock, but only the relatively small amount of GHGs from changes each year. Strangely, it does not count the much larger amount of annual GHG reductions from photosynthesis that are foregone by using 26 percent of land worldwide for grazing livestock and 33 percent of arable land for growing feed, rather than allowing it to regenerate forest. By itself, leaving a significant amount of tropical land used for grazing livestock and growing feed to regenerate as forest could potentially mitigate *as much as half (or even more) of all anthropogenic GHGs.*

14.5% of total GHG anthropogenic emissions

51%!!

Uncounted, Overlooked, and Misallocated Livestock-related GHG Emissions

	Annual GHG emissions (CO_2e)	Percentage of worldwide total
	million tons	
FAO estimate	7,516	11.8
Uncounted in current GHG inventories:		
1. Overlooked respiration by livestock	8,769	13.7
2. Overlooked land use	≥2,672	≥4.2
3. Undercounted methane	5,047	7.9
4. Other four categories (see text)	≥5,560	≥8.7
Subtotal	≥22,048	≥34.5
Misallocated in current GHG inventories:		
5. Three categories (see text)	≥3,000	≥4.7
Total GHGs attributable to livestock products	≥32,564	≥51.0

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BMJ 2017;357:j2190 doi: 10.1136/bmj.j2190 (Published 9 May 2017)

Red and processed meat, and human and planetary health

Contemporary meat consumption harms human health and is equally bad for the planet

John D Potter *professor of epidemiology*

Damage to planetary health includes depletion of aquifers[15] (producing 1 kg of meat protein requires more than 110 000 L of water[22]); production of 37% of anthropogenic methane (with 23 times the global warming potential of CO_2) and 65% of anthropogenic nitrous oxide (almost 300 times the potential of CO_2); groundwater pollution; and 64% of anthropogenic ammonia emissions, which contribute significantly to acid rain and acidification of ecosystems.[15] The combination of rainforest destruction for livestock and the production of greenhouse gases by livestock contributes more to climate change than do fossil fuels used for transport.[15]

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We need to talk about meat

www.thelancet.com Vol 392 November 24, 2018

Meat production doesn't just affect the ecosystem by production of gases, and studies now question the system of production's direct effect on global freshwater use, change in land use, and ocean acidification. A recent paper in *Science* claims that even the lowest-impact meat causes "much more" environmental impact than the least sustainable forms of plant and vegetable production.

So what is a healthy amount of red or processed meat? It's looking increasingly like the answer, for both the planet and the individual, is very little. Saying this is one thing. Getting the world to a place where we have the ability to balance the desire to eat whatever we want with our need to preserve the ecosystem we rely on to sustain ourselves is quite another. The conversation has to start soon. ■ *The Lancet*

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PLOS ONE

RESEARCH ARTICLE

The Impacts of Dietary Change on Greenhouse Gas Emissions, Land Use, Water Use, and Health: A Systematic Review

Lukasz Aleksandrowicz[1,2]*, Rosemary Green[1,2], Edward J. M. Joy[1,2], Pete Smith[3], Andy Haines[1,4]

PLOS ONE | DOI:10.1371/journal.pone.0165797 November 3, 2016

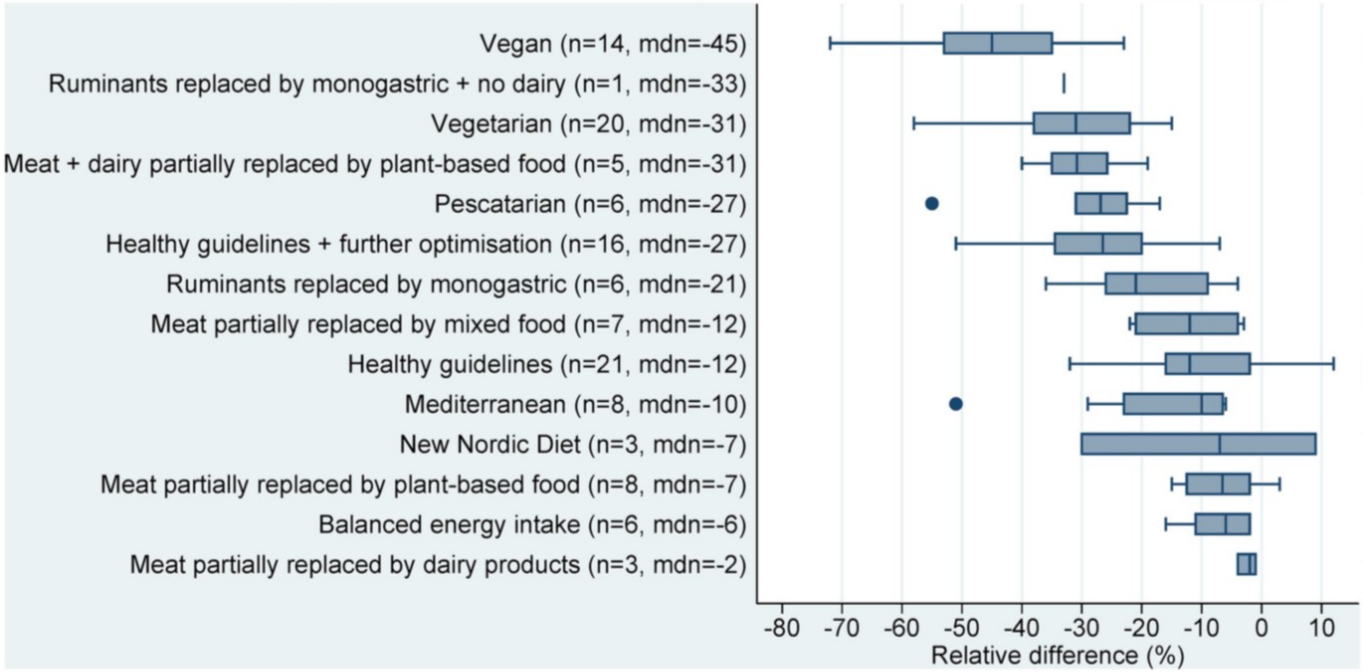

Fig 2. Relative differences in GHG emissions (kg CO_2eq/capita/year) between current average diets and sustainable dietary patterns. Note: n = number of studies, mdn = median.

doi:10.1371/journal.pone.0165797.g002

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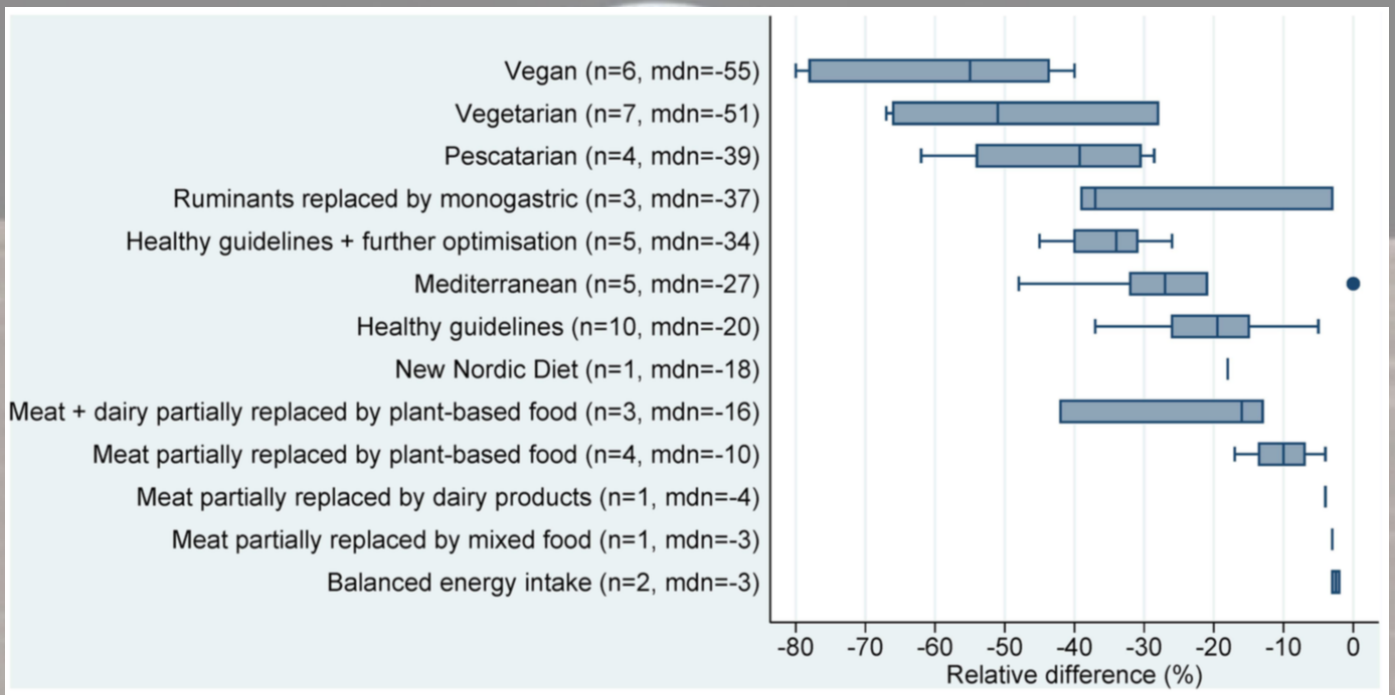

Fig 3. Relative differences in land use (m^2/capita/year) between current average diets and sustainable dietary patterns. Note: n = number of studies, mdn = median.

doi:10.1371/journal.pone.0165797.g003

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nature communications
Article
Nature Communications | (2023)14:6227
https://doi.org/10.1038/s41467-023-41789-3

The global and regional air quality impacts of dietary change

Air pollution increases cardiovascular and respiratory-disease risk, and reduces cognitive and physical performance. Food production, especially of animal products, is a major source of methane and ammonia emissions which contribute to air pollution through the formation of particulate matter and ground-level ozone. Here we show that dietary changes towards more plant-based flexitarian, vegetarian, and vegan diets could lead to meaningful reductions in air pollution with health and economic benefits. Using systems models, we estimated reductions in premature mortality of 108,000-236,000 (3-6%) globally, including 20,000-44,000 (9-21%) in Europe, 14,000-21,000 (12-18%) in North America, and 49,000-121,000 (4-10%) in Eastern Asia. We also estimated greater productivity, increasing economic output by USD 0.6-1.3 trillion (0.5-1.1%). Our findings suggest that incentivising dietary changes towards more plant-based diets could be a valuable mitigation strategy for reducing ambient air pollution and the associated health and economic impacts, especially in regions with intensive agriculture and high population density.

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Article https://doi.org/10.1038/s41467-023-41789-3

The global and regional air quality impacts of dietary change

The magnitude of health benefits differed substantially across regions (Fig. 2, SI Fig 6, SI Table 17). The European region, where intensive agriculture is combined with high population density, exhibited the greatest relative reductions (9–21% fewer premature deaths from PM2.5 and ozone across the diet scenarios, 19,700–44,100), followed by North America (12–18%, 14,400–21,000), and Developed Asia-Pacific (10–18%, 5300–9500), whilst Eastern Asia exhibited large absolute reductions (4–10%, 49,200–120,900).

The diet-related improvements in air quality were associated with enhanced labour productivity, which impacts economic output. Enhanced productivity from clean air increased economic output by about USD 1.3 trillion (with a low to high range of USD 0.5–3.0 trillion, corresponding to 1.1% with a range of 0.4–2.5% of global GDP in 2030) for the adoption of vegan diets, and USD 0.6–1.1 trillion (0.5–0.9% of GDP) for the adoption of flexitarian and vegetarian diets, respectively

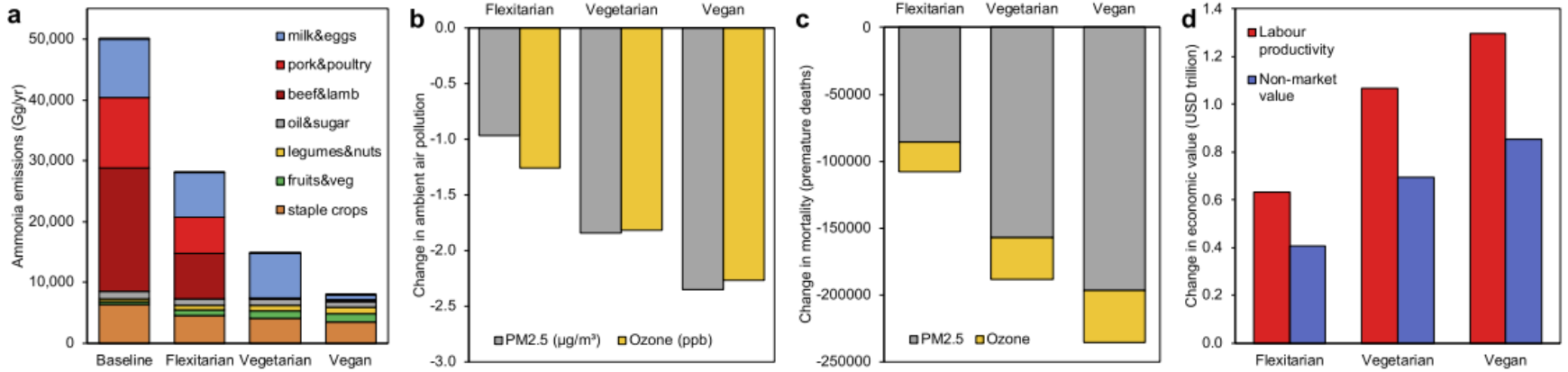

Fig. 1 | Global air quality impacts of dietary change. The impacts include global changes in agricultural emissions (**a**), air pollution (**b**), premature mortality (**c**), and economic output (**d**) in the year 2030 for dietary changes to flexitarian, vegetarian, and vegan diets. Uncertainty intervals for the health and economic estimates are listed in the SI Datafile. PM2.5 denotes particular matter with a diameter smaller than 2.5 micrometres. The concentration of PM2.5 is measured in micrograms per cubic metre (μg/m³) and that of ozone in parts per billion (ppb).

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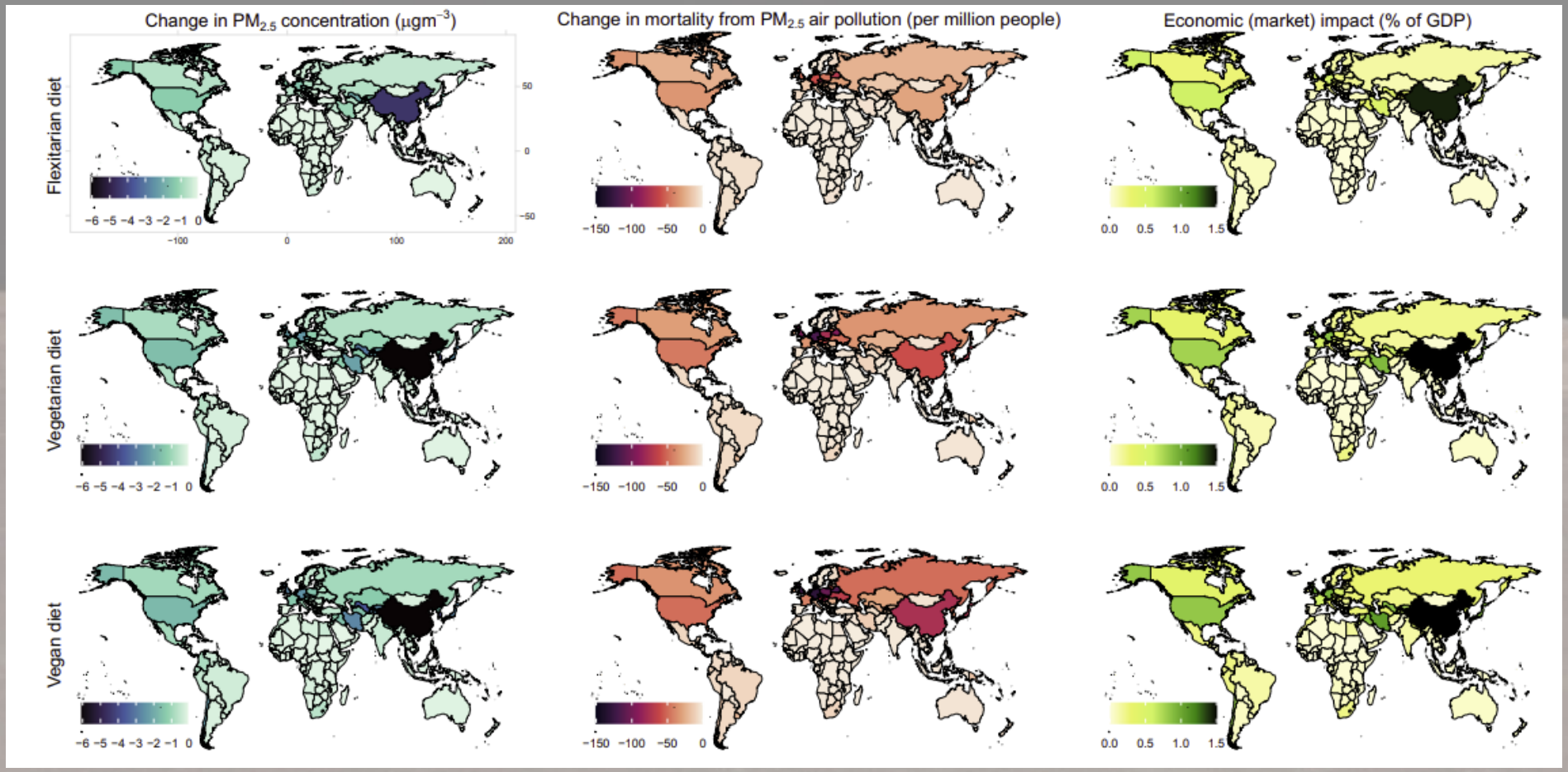
The global and regional air quality impacts of dietary change



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LOMA LINDA UNIVERSITY

Substituting beans for beef as a contribution toward US climate change targets

Helen Harwatt[1] · Joan Sabaté[1] · Gidon Eshel[2,3] · Sam Soret[1] · William Ripple[4]

Climatic Change (2017) 143:261–270
DOI 10.1007/s10584-017-1969-1

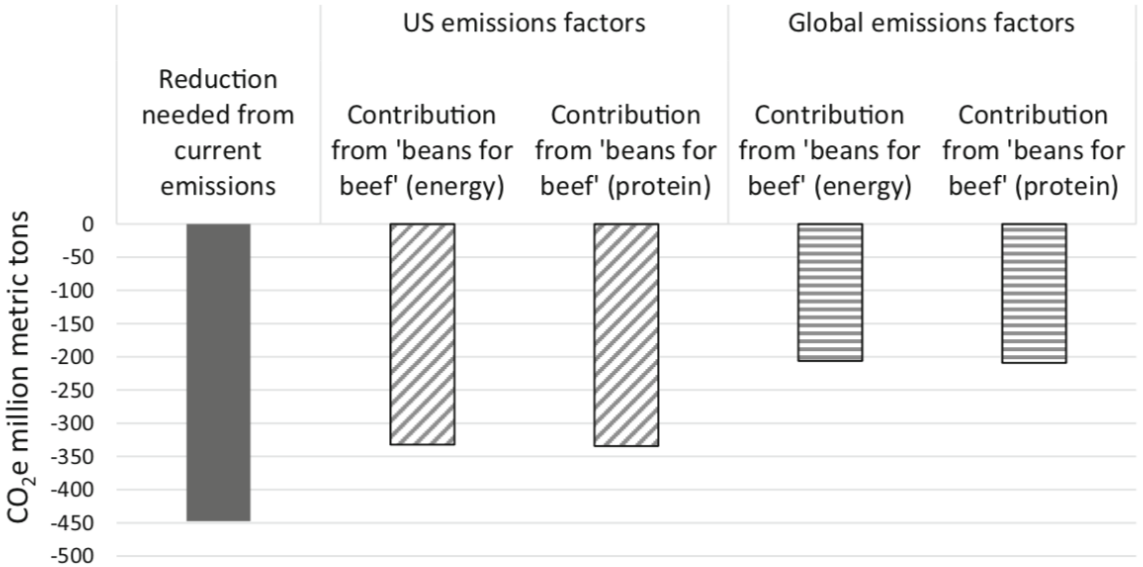

Fig. 1 Greenhouse gas reductions. CO_2e reductions needed to achieve US climate change targets set for 2020 (*solid box*), in comparison to the CO_2e reductions achieved from substituting beans for beef, by energy equivalence and protein weight equivalence using US emission factors (*diagonally hatched boxes*) and global emission factors (*horizontally hatched boxes*)

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Climatic Change (2017) 143:261–270
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We use the targeted reduction for 2020 as a reference and apply published Life Cycle Assessment data on GHG emissions to beans and beef consumed in the US. We calculate the difference in GHGs resulting from the replacement of beef with beans in terms of both calories and protein. Our results demonstrate that substituting one food for another, beans for beef, could achieve approximately 46 to 74% of the reductions needed to meet the 2020 GHG target for the US. In turn, this shift would free up 42% of US cropland (692,918 km^2). While not currently recognized as a climate policy option, the "beans for beef" scenario offers significant climate change mitigation and other environmental benefits, illustrating the high potential of animal to plant food shifts.

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Climatic Change (2017) 143:261–270
DOI 10.1007/s10584-017-1969-1

The example analyzed is particularly impactful for mitigating near-term global temperature rise (Rockstrom et al. 2009; Ripple et al. 2014). Radiative forcing in the short-term, i.e., over the next several decades, will be dominated by CH_4 due to its relatively short atmospheric lifetime (~9 years) in comparison to CO_2 (~100 years) and its much higher global warming potential (Myhre et al. 2013). Because we replace beef, a high CH_4 source, with beans, a relatively much lower CH_4 source, the expected resultant decline in radiative forcing and decline in decadal scale warming will be greater than that expected from current policies, which focus almost exclusively on reducing CO_2 emissions (Pierrehumbert and Eshel 2015). However, to meet long-term GHG reduction targets, significant reductions of both CO_2 and non-CO_2 emissions are required (Blanco et al. 2014).

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Climatic Change (2017) 143:261–270
DOI 10.1007/s10584-017-1969-1

Our findings demonstrate that substituting plant sourced foods for animal sourced foods can play an important role in climate change mitigation. While substituting beans for beef does not entirely satisfy the US GHG reduction targets, it could be combined with mitigation efforts for other major emitters such as power generation or transportation.

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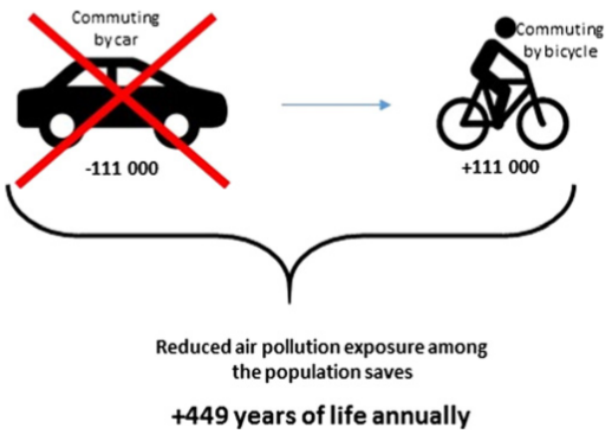
Impacts on air pollution and health by changing commuting from car to bicycle

Christer Johansson [a,b,*], Boel Lövenheim [b], Peter Schantz [c], Lina Wahlgren [c], Peter Almström [d], Anders Markstedt [d], Magnus Strömgren [e], Bertil Forsberg [f], Johan Nilsson Sommar [f]

Science of the Total Environment 584–585 (2017) 55–63

This study indicates that around 111,000 car commuters in the Stockholm region have the physical capacity and short enough travel distance to potentially switch to commuting by cycling within a duration of 30 min. The reduced number of car travels result in lower emissions of vehicle generated air pollutants and thereby lower exposures of the general population. The health benefits as indicated by premature mortality of reduced exposure are estimated to be twice as large as the benefits associated with reduced emissions when the congestion tax system around the Inner City of Stockholm was installed.

- A very large potential for transferring car commuters to cycling; more than 111 000 car commuters shifting.
- Reduced vehicle emission and thereby reduced population exposure, saves 449 years of life annually in Stockholm County.
- This is more than double the effect estimated in connection with the introduction of congestion tax in Stockholm.



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MOBILITY AND TRANSPORT

European Commission

Estimated effects of a one-third reduction in the number of car trips from 44% to 30% of all trips in a city:

- 30% less traffic jams,
- 25% reduction in pollution from motor vehicles (all types),
- 36% reduction in carbon monoxide (CO) emissions,
- 37% reduction in hydrocarbon emissions (CH) by private cars only,
- 56% reduction in nitrogen dioxide (NO_2) emission,

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TABLE 7. SUMMARY OF CYCLING AND AIR QUALITY IN SEVILLE

SEVILLE				
Air Quality Metric[a]		**2006**	**2012**	**Limit Value**
NO_2 annual mean – [µg/m³]	-29%	34	24	40 µg/m³
NO_2 hourly exceedances – [hours]		3	3	18h >200 µg/m³
PM_{10} annual mean – [µg/m³]	-20%	41	33	40 µg/m³
PM_{10} daily exceedances – [days]	-74%	152	40	35d > 50 µg/m³
Mode Share[b]		**2006**	**2012[c]**	
Cycling		0.5%	7.0%	
Private car		Unavailable	35%	
Measures for air quality improvement				
Summary of measures on road-traffic (2006-2014)[d]		• Promoting non-motorised transportation modes. • Developing and enhancing cycling in the city. • Creating separate infrastructure for cyclists. • Imposing restrictions to use of private cars (bans). • Incentivising the use of high-occupancy vehicles. • Increasing and improving existing public transport infrastructure. • Introducing new car-free zones in the city centre. • Revising the existing mobility plan to integrate intermodal transportation options.		

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doi:10.1093/eurheartj/ehaa411

Where have all the myocardial infarctions gone during lockdown? The answer is blowing in the less-polluted wind

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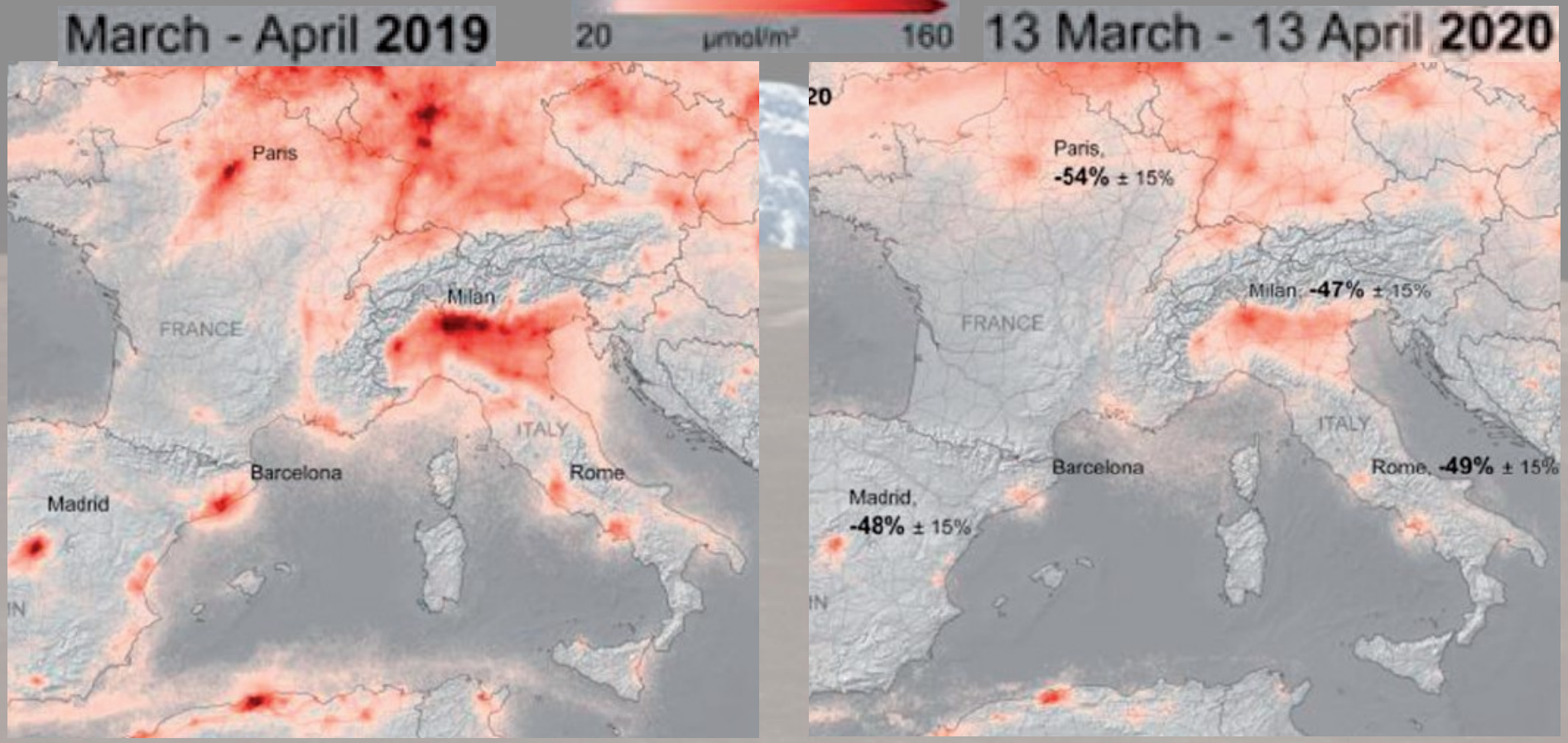

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Net zero by 2050 in the UK

www.thelancet.com **Vol 393 May 11, 2019**

Editorial

The Committee on Climate Change (CCC), an independent body that advises the UK Government, published a report on May 2, *Net zero—the UK's contribution to stopping global warming*. Stating that net zero is "necessary, feasible, and cost-effective", the CCC set a target year of 2050 for complete elimination of greenhouse gas (GHG) emissions in the UK.

REVERSE THE PARADIGM!!!

CONSEQUENCE

CAUSE

What does a 2050 target of net zero mean for health? Using cost analysis, the specifics of health are bundled into broader social benefits with relatively scant evaluation. However, as established through *Lancet* Series, Commissions, and the annual *Lancet* Countdown on health and climate change, evidence of co-benefits for health can be categorised in three broad areas: increasing physical activity; improving air quality and reducing pollution; and healthier diets.

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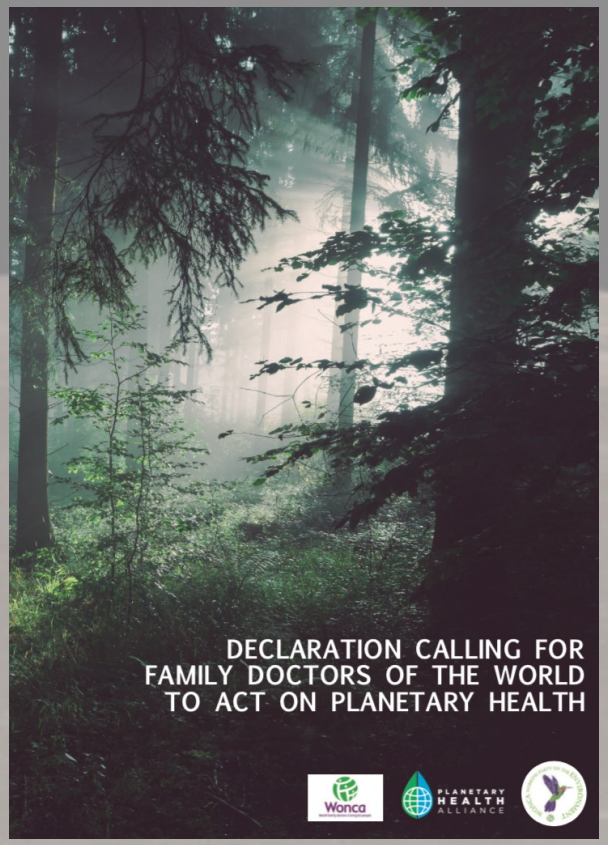
Chapter 3: What to do, and how?

“a new paradigm!”



www.passaretti.org/presentazioni/planetrehab.pdf

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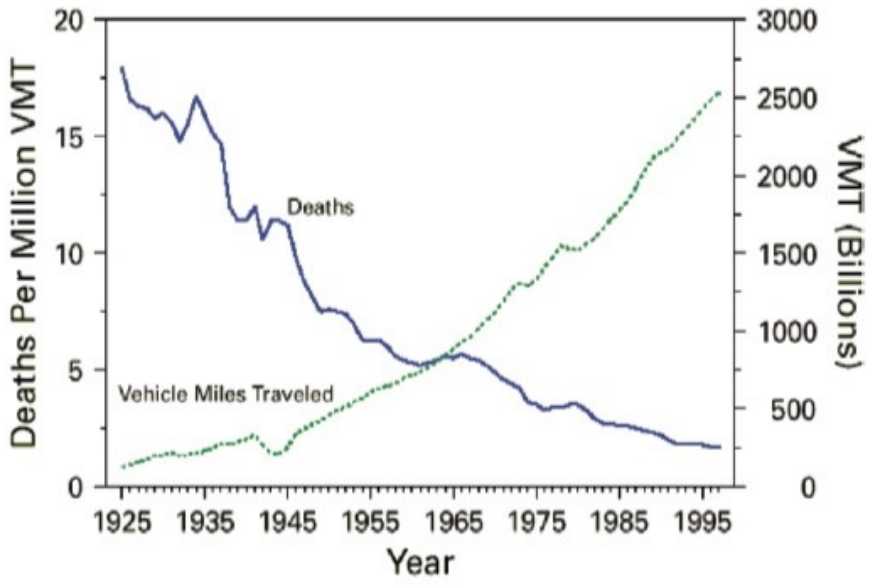

- **Driver: (consumer)**
  - Education
  - Licensing
  - Limits on phone use, texting
- **Car: (product)**
  - Active: seat belts, child seats, motorcycle helmets
  - Passive: padded interiors, collapsible steering columns, shatterproof glass, air bags
  - Crash safety standards
  - Safety inspections
- **Road: (environment)**
  - Road engineering, guard rails, rumble strips
  - Speed limits
  - Stop signs, stop lights, caution signs
- **Culture:**
  - Designated driver campaign
  - Drunk-driving legislation
  - Private advocacy, eg. MADD

Figure 10. A roadmap for improving population dietary habits. **Top,** A great public health success of the 20th century was a 90% reduction in deaths from motor vehicle accidents, from 18 to 1.7 deaths per million vehicle miles. **Bottom,** This remarkable triumph was achieved by a comprehensive, multicomponent effort targeting the driver, car, road, and culture. This provides a road map for improving population diets: address the consumer, the product (foods and beverages), the environment (retailers, cafeterias, restaurants), and the culture (unhealthy eating). MADD indicates Mothers Against Drunk Driving. **Top** reproduced from Centers for Disease Prevention and Control[405].

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Planetary health: protecting human health on a rapidly changing planet

Lancet 2017; 390: 2860–68 *Samuel S Myers*

We need to expand the realm of public health to include how we manage our planet's natural systems: the types of cities we construct, how we produce energy, how we feed ourselves, and how well we protect our marine and terrestrial biodiversity. In the context of planetary health, the boundaries between public health and nearly every other facet of human activity become more porous. In short, we need a new paradigm.

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Moving towards ambitious climate policies: Monetised health benefits from improved air quality could offset mitigation costs in Europe

ENVIRONMENTAL SCIENCE & POLICY 50 (2015) 252–269
http://dx.doi.org/10.1016/j.envsci.2015.03.001

Simone Schucht[a,*], *Augustin Colette*[a], *Shilpa Rao*[b], *Mike Holland*[c,d], *Wolfgang Schöpp*[b], *Peter Kolp*[b], *Zbigniew Klimont*[b], *Bertrand Bessagnet*[a], *Sophie Szopa*[e], *Robert Vautard*[e], *Jean-Marc Brignon*[a], *Laurence Rouïl*[a]

Calculating a sensitivity range for the monetised health benefit by applying alternative monetary values (mean values) for the VOLY estimate for mortality and the alternative metric for chronic $PM_{2.5}$ mortality (VSL) listed in Table 2 leads to the spread for the monetised health benefit as indicated in Table 4 (bottom part). Additional benefits for health of the ambitious climate policy range from approximately 50 billion €/year (low VOLY estimate) to 295 billion €/year (high VSL estimate) in 2050.

Therefore, depending on whether chronic mortality of $PM_{2.5}$ is valued with VOLY or with VSL and whether median or mean values are used, health co-benefits from the ambitious climate policy will at least cover 75%, and may in fact amount to more than 450% of the additional net aggregate air pollution mitigation and climate policy costs.

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Association Between Neighborhood Walkability and Predicted 10-Year Cardiovascular Disease Risk: The CANHEART (Cardiovascular Health in Ambulatory Care Research Team) Cohort

Nicholas A. Howell, PhD; Jack V. Tu, MD, PhD, MSc; Rahim Moineddin, PhD; Anna Chu, MHSc; Gillian L. Booth, MD, MSc

J Am Heart Assoc. 2019;8:e013146. DOI: 10.1161/JAHA.119.013146

A cross-sectional sample was drawn of community-dwelling individuals residing in 15 major urban centers in Ontario, Canada on January 1, 2008. Individuals were selected for inclusion from a cohort created from linked health administrative databases, known as the CANHEART (Cardiovascular Health in Ambulatory Care Research Team) cohort.[29] These

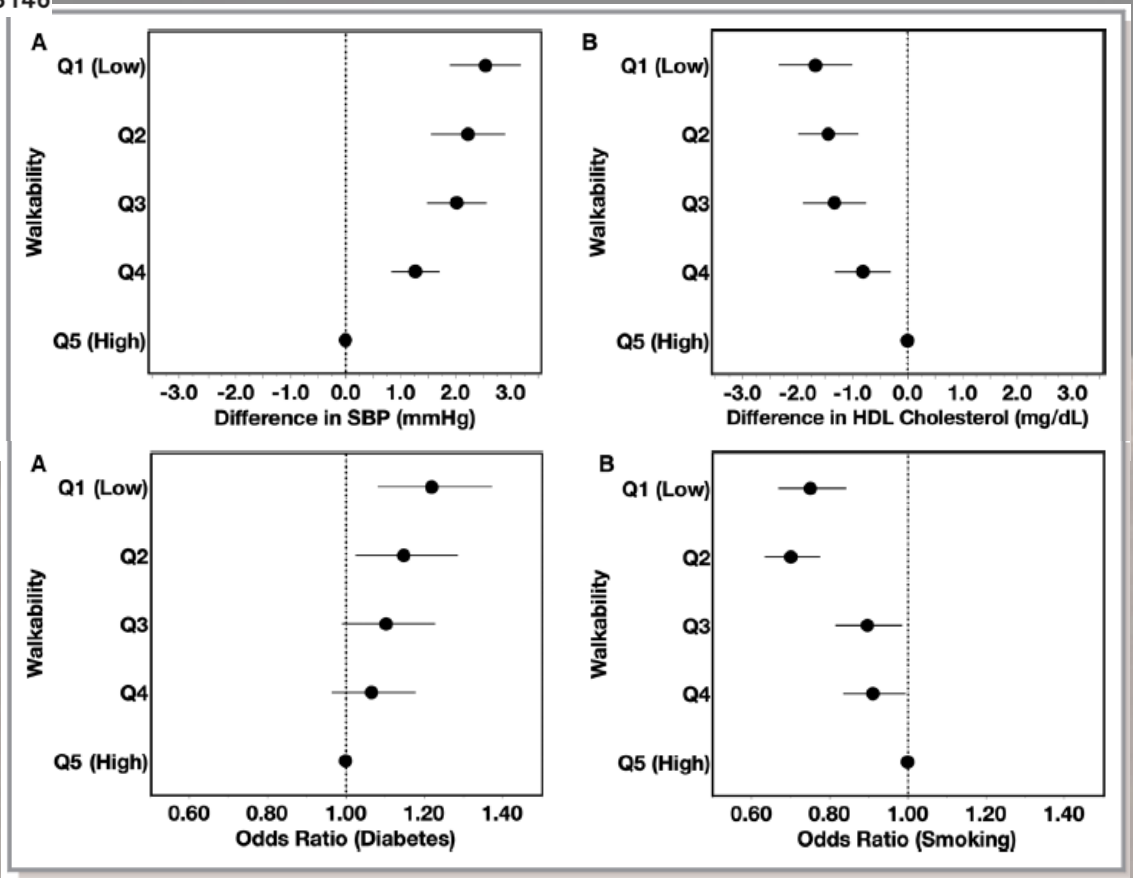
Clinical Perspective

What Is New?

- Adults residing in less walkable neighborhoods had a higher predicted 10-year risk of cardiovascular disease, a lower high-density lipoprotein cholesterol level, higher systolic blood pressure, and higher likelihood of having diabetes mellitus, but were also less likely to smoke.

What Are the Clinical Implications?

- Living in neighborhoods that make it easier to be physically active is associated with reduced risk of cardiovascular disease.



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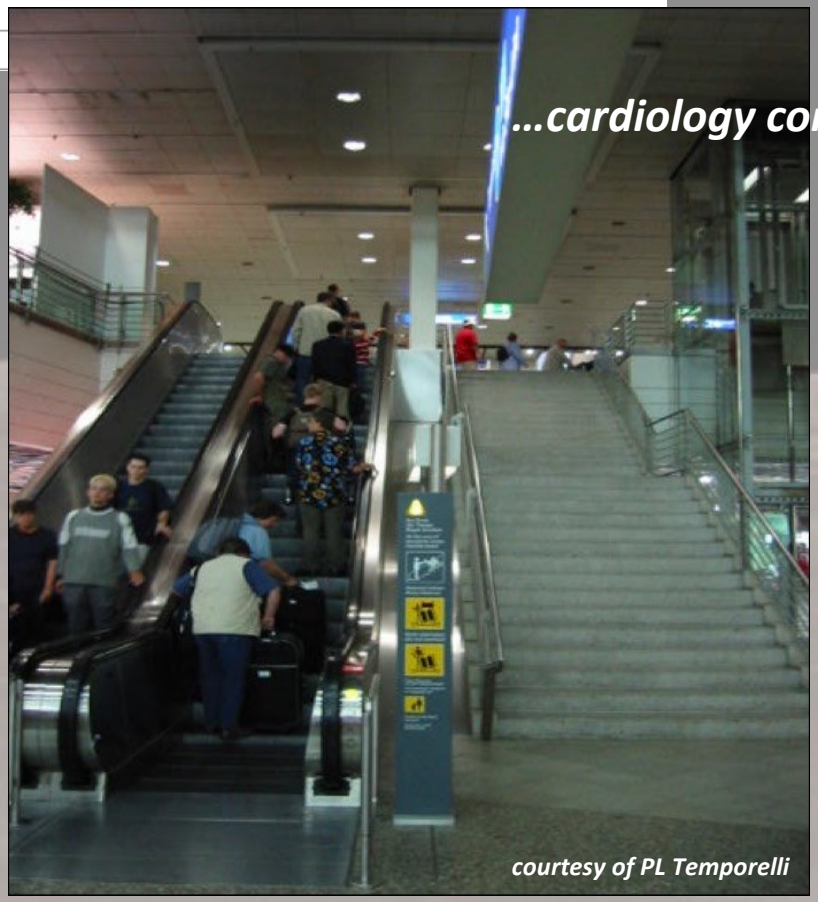
Changing Physical Activity Participation for the Medical Profession

Antronette K. Yancey, MD, MPH
Robert E. Sallis, MD
Roshan Bastani, PhD



courtesy of PL Temporelli

…cardiology congress, somewhere in USA…

30 steps to the congress rooms

www.passaretti.org/presentazioni/planetrehab.pdf

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Journal of Environmental Psychology 33 (2013) 1–8

Contents lists available at SciVerse ScienceDirect

Journal of Environmental Psychology

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

Climate change and meat eating: An inconvenient couple?

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This paper addresses the relationship between meat eating and climate change focusing on motivational explanations of environmentally-relevant consumer behavior. Based on a sample of 1083 Dutch consumers, it examines their responses to the idea that they can make a big difference to nature and climate protection by choosing one or more meals without meat every week. This idea can be seen as a new opportunity to help mitigation, but also as a counterproductive message that might trigger negative responses among consumers who are skeptical about climate change. As hypothesized, the meat-free meal idea was received more positively by consumers who valued care for nature and more negatively by those who did not value it. Also as hypothesized, the meat-free meal idea was received more negatively by consumers who were skeptical about the seriousness of climate change. The idea was not received more positively by those who did take it seriously. The results support the notion that the meat-free meal idea may serve as a counterproductive message. From the perspective of motivation, it is preferable not to isolate the meat-climate issue but to develop an approach that combines multiple values regarding food choices, including health and nature-related values.

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VIEWPOINT

Nutrition Counseling in Clinical Practice
How Clinicians Can Do Better

Scott Kahan, MD, MPH
Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland; and George Washington University School of Medicine, Washington, DC.

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JAMA September 26, 2017 Volume 318, Number 12

Despite overwhelming evidence that relatively small dietary changes can significantly improve health, clinicians seldom discuss nutrition with their patients. Poor nutritional intake and nutrition-related health conditions, such as cardiovascular disease (CVD), diabetes, obesity, hypertension, and many cancers, are highly prevalent in the United States,[1] yet only 12% of office visits include counseling about diet.[2] Even among high-risk patients with CVD, diabetes, or hyperlipidemia, only 1 in 5 receive nutrition counseling.[2] It is likely that many patients receive most of their nutrition information from other, and often unreliable, sources.

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PERSPECTIVE

LESS IS MORE

Ignorance of Nutrition Is No Longer Defensible

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Adjunct Faculty, George Washington University School of Medicine and Health Sciences, Washington, DC; Physicians Committee for Responsible Medicine, Washington, DC; and Barnard Medical Center, Washington, DC.

JAMA Intern Med. Published online July 1, 2019.
doi:10.1001/jamainternmed.2019.2273

We might have been forgiven for ignoring diet's role. Its importance was only gradually becoming clear. A few years later, I had the opportunity to interview patients with coronary artery disease participating in a clinical trial testing a nutrition and lifestyle intervention.[2] Over the course of the trial, their chest pains had remitted, their clinical status had greatly improved, and they were very appreciative. One participant, however, was angry. Previous physicians, the patient said, had been ready to perform open heart surgery, but no one had communicated that diet changes might be able to fix the problem much more easily.

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Appetite 96 (2016) 487–493

Contents lists available at ScienceDirect

Appetite

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

Eating like there's no tomorrow: Public awareness of the environmental impact of food and reluctance to eat less meat as part of a sustainable diet

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Public Health Nutrition Research Group, University of Aberdeen, Foresterhill, Aberdeen AB25 2ZD, UK

Three dominant themes emerged: a lack of awareness of the association between meat consumption and climate change, perceptions of personal meat consumption playing a minimal role in the global context of climate change, and resistance to the idea of reducing personal meat consumption. People associated eating meat with pleasure, and described social, personal and cultural values around eating meat. Some people felt they did not need to eat less meat because they had already reduced their consumption or that they only ate small quantities. Scepticism of scientific evidence linking meat and climate change was common. Changing non-food related behaviours was viewed as more acceptable and a greater priority for climate change mitigation. The study highlights the role meat plays in the diet for many people, beyond nutritional needs. If healthy, sustainable dietary habits are to be achieved, cultural, social and personal values around eating meat must be integrated into the development of future dietary recommendations.

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JAMA Network Open. 2022;5(12):e2248320. doi:10.1001/jamanetworkopen.2022.48320
December 27, 2022

Original Investigation | Public Health

Effect of Climate Change Impact Menu Labels on Fast Food Ordering Choices Among US Adults

A Randomized Clinical Trial

Julia A. Wolfson, PhD, MPP; Aviva A. Musicus, ScD; Cindy W. Leung, ScD, MPH; Ashley N. Gearhardt, PhD; Jennifer Falbe, ScD, MPH

Menu Labels by Experimental Condition

A Control label

Scan the QR code for more menu information.
2,000 calories a day is used for general nutrition advice, but calorie needs vary.

B Low-climate impact label

LOW CLIMATE IMPACT This item is environmentally sustainable. It has low greenhouse gas emissions and a low contribution to climate change.
2,000 calories a day is used for general nutrition advice, but calorie needs vary.

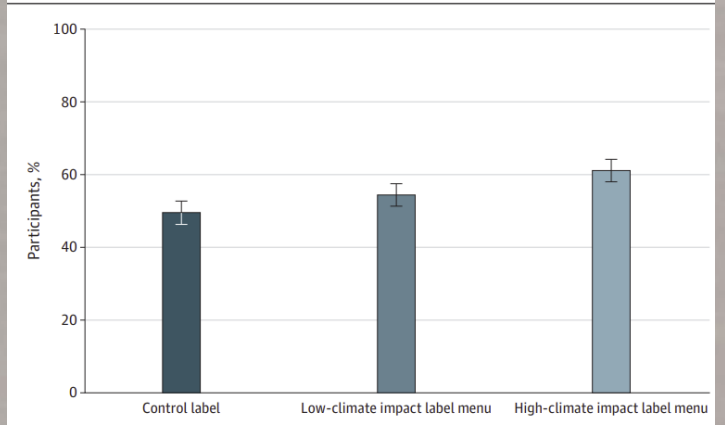
C High-climate impact label

HIGH CLIMATE IMPACT This item is not environmentally sustainable. It has high greenhouse gas emissions and a high contribution to climate change.
2,000 calories a day is used for general nutrition advice, but calorie needs vary.

While individuals who viewed the menu with high-climate impact labels selected healthier items compared individuals in the control group, which was consistent with our hypothesis, this was not the case for individuals in the low-climate impact condition.

CONCLUSIONS AND RELEVANCE This randomized clinical trial's findings suggest that climate impact menu labels, especially negatively framed labels highlighting high-climate impact items (ie, red meat), were an effective strategy to reduce red meat selections and encourage more sustainable choices.

Predicted Probability of Selecting a Sustainable Menu Item by Experimental Condition



www.passaretti.org/presentazioni/planetrehab.pdf

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Appetite 96 (2016) 487–493

Contents lists available at ScienceDirect

Appetite

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

Eating like there's no tomorrow: Public awareness of the environmental impact of food and reluctance to eat less meat as part of a sustainable diet

Jennie I. Macdiarmid*, Flora Douglas, Jonina Campbell

Public Health Nutrition Research Group, University of Aberdeen, Foresterhill, Aberdeen AB25 2ZD, UK

Three dominant themes emerged: a lack of awareness of the association between meat consumption and climate change, perceptions of personal meat consumption playing a minimal role in the global context of climate change, and resistance to the idea of reducing personal meat consumption. People associated eating meat with pleasure, and described social, personal and cultural values around eating meat. Some people felt they did not need to eat less meat because they had already reduced their consumption or that they only ate small quantities. Scepticism of scientific evidence linking meat and climate change was common. Changing non-food related behaviours was viewed as more acceptable and a greater priority for climate change mitigation. The study highlights the role meat plays in the diet for many people, beyond nutritional needs. If healthy, sustainable dietary habits are to be achieved, cultural, social and personal values around eating meat must be integrated into the development of future dietary recommendations.

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Carne coltivata in laboratorio

Tutti ne parlano, ma tecnicamente come si fa? La **carne coltivata** è il risultato della tecnologia dell'agricoltura cellulare, un approccio che differisce notevolmente dai metodi tradizionali di produzione di carne. A differenza dell'allevamento animale, la carne coltivata non richiede ovviamente la riproduzione, l'allevamento o la macellazione del bestiame. Invece, la coltivazione della carne avviene attraverso il **processo di crescita di cellule animali in un bioreattore**, chiamato anche coltivatore, che fornisce un ambiente controllato e pulito per la crescita delle cellule.

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United Nations Environment Programme

UN environment

The team made an important discovery: the "magic ingredient" heme - an iron-containing molecule that occurs naturally in every cell of every animal and plant. It is responsible for the unique flavours and aromas of meat. O. Brown and his team found that by adding a plant gene to yeast cells, they could produce heme in unlimited quantities, with a tiny fraction of the environmental impact.

"Meat is composed of amino acids, lipids, minerals and water. Animals use their digestive and muscular systems to convert vegetation and water into meat. We're going straight to the plant, bypassing the animal, and building meat directly. We get better every year and are on a relentless march toward that perfect and indistinguishable build of meat from plants, Corn, soy and wheat dominate agriculture in America. We can replace that. Take that same piece of land to grow protein directly from plants, and we can slash natural resources needed, using land more efficiently."

-95%	land use
-74%	water use
-87%	greenhouse gas emissions
-100%	antibiotics, hormones etc.
-100%	cruelty

Impossib ... *ers of the Champions of the Earth Award, in the Scien*

Slow Medicine
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-95%	land use
-74%	water use
-87%	greenhouse gas emissions
-100%	antibiotics, hormones etc.
-100%	cruelty

Cost + 23%

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«In this world, nothing can be said to be certain, except death and taxes»
Benjamin Franklin

Review

Effects of Tobacco Taxation and Pricing on Smoking Behavior in High Risk Populations: A Knowledge Synthesis

Pearl Bader [1,*], David Boisclair [2] and Roberta Ferrence [3]

International Journal of **Environmental Research and Public Health**

2011, *8*, 4118-4139; doi:10.3390/ijerph8114118

«If it were totally up to me, I would raise the cigarette tax so high the revenues from it would go to zero»

Michael Bloomberg (New York mayor)

Most studies found that raising cigarette prices through increased taxes is a highly effective measure for reducing smoking among youth, young adults, and persons of low socioeconomic status. However, there is a striking lack of evidence about the impact of increasing cigarette prices on smoking behavior in heavy/long-term smokers, persons with a dual diagnosis and Aboriginals.

«Yet we have a tax that could prevent hundreds of millions of premature deaths. It is time to use it more effectively»

Pearl Bader & coll.

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«In this world, nothing can be said to be certain, except death and taxes»
Benjamin Franklin

PLOS ONE

RESEARCH ARTICLE

Health-motivated taxes on red and processed meat: A modelling study on optimal tax levels and associated health impacts

Marco Springmann[1,2]*, Daniel Mason-D'Croz[3,4], Sherman Robinson[3], Keith Wiebe[3], H. Charles J. Godfray[1,5], Mike Rayner[1,2], Peter Scarborough[1,2]

PLOS ONE | https://doi.org/10.1371/journal.pone.0204139 November 6, 2018

The consumption of red and processed meat has been associated with increased mortality from chronic diseases, and as a result, it has been classified by the World Health Organization as carcinogenic (processed meat) and probably carcinogenic (red meat) to humans. One policy response is to regulate red and processed meat consumption similar to other carcinogens and foods of public health concerns. Here we describe a market-based approach of taxing red and processed meat according to its health impacts.

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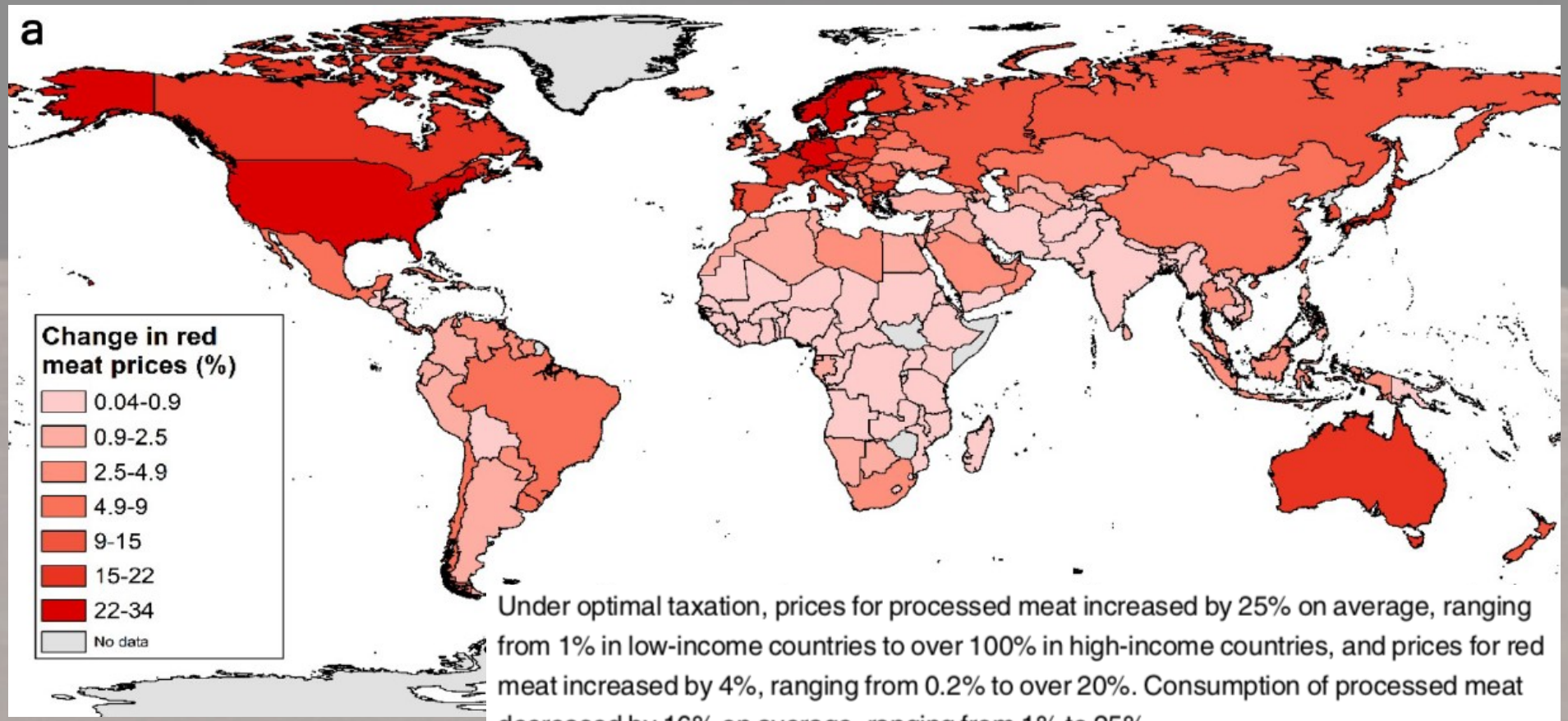
Health-motivated taxes on red and processed meat: A modelling study on optimal tax levels and associated health impacts

PLOS ONE | https://doi.org/10.1371/journal.pone.0204139 November 6, 2018



Under optimal taxation, prices for processed meat increased by 25% on average, ranging from 1% in low-income countries to over 100% in high-income countries, and prices for red meat increased by 4%, ranging from 0.2% to over 20%. Consumption of processed meat decreased by 16% on average, ranging from 1% to 25%

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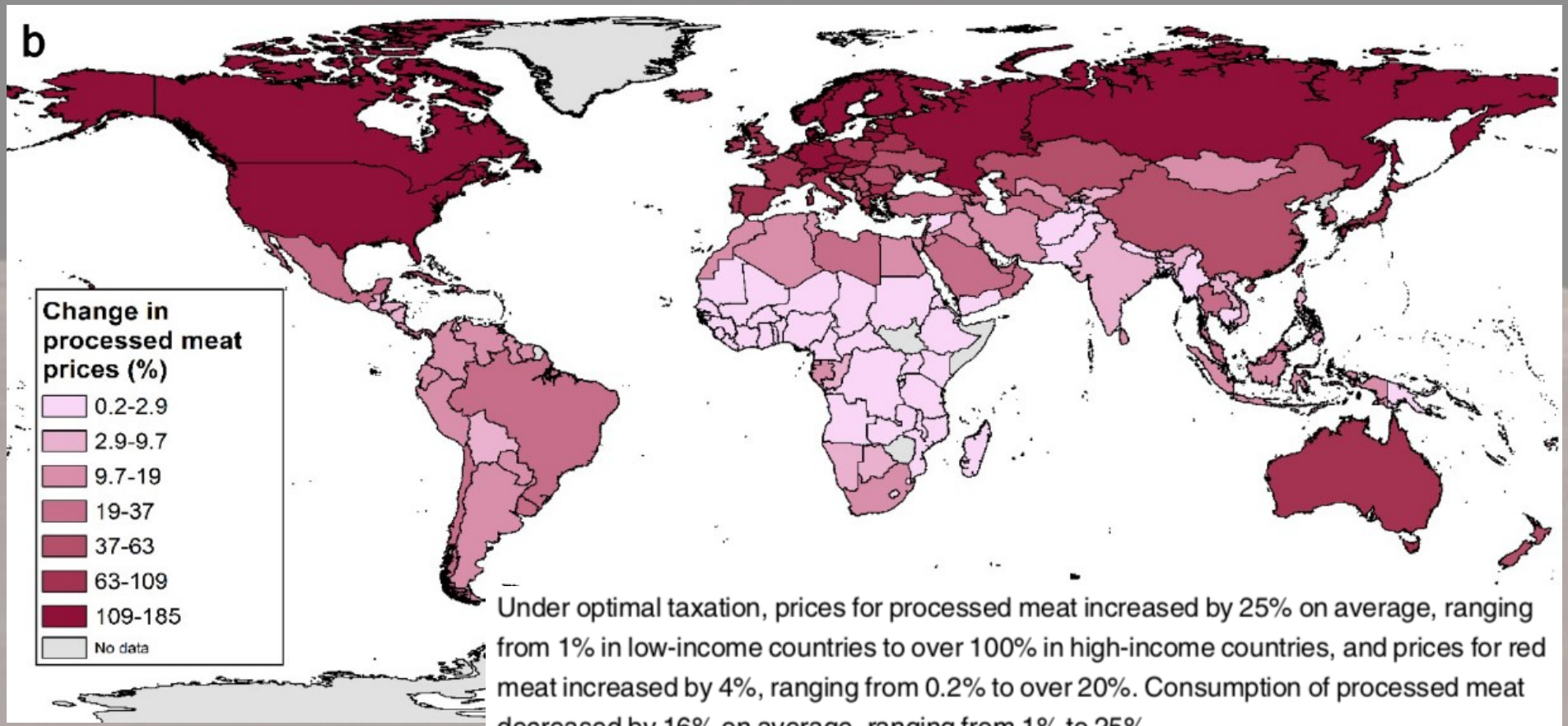

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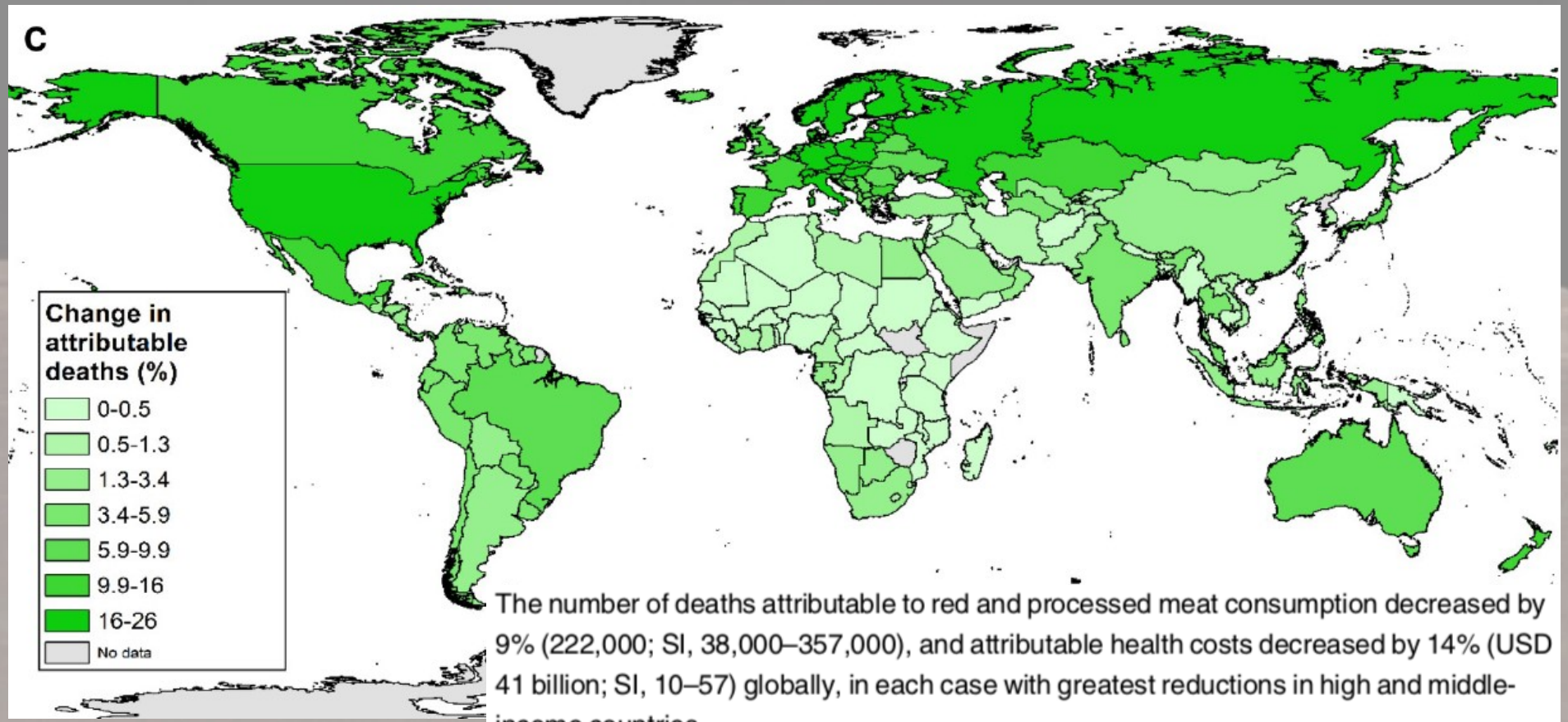

The number of deaths attributable to red and processed meat consumption decreased by 9% (222,000; SI, 38,000–357,000), and attributable health costs decreased by 14% (USD 41 billion; SI, 10–57) globally, in each case with greatest reductions in high and middle-income countries.

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The 21st-century great food transformation

Tamara Lucas, Richard Horton

Published Online
January 16, 2019
http://dx.doi.org/10.1016/
S0140-6736(18)33179-9

See The Lancet Commissions
page 447

Civilisation is in crisis. We can no longer feed our population a healthy diet while balancing planetary resources. For the first time in 200 000 years of human history, we are severely out of synchronisation with the planet and nature. This crisis is accelerating, stretching Earth to its limits, and threatening human and other species' sustained existence. The publication now of Food in the Anthropocene: the EAT–*Lancet* Commission on healthy diets from sustainable food systems[1] could be neither more timely nor more urgent.

The dominant diets that the world has been producing and eating for the past 50 years are no longer nutritionally optimal, are a major contributor to climate change, and are accelerating erosion of natural biodiversity.

The human cost of our faulty food systems is that almost 1 billion people are hungry, and almost 2 billion people are eating too much of the wrong food.

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Food in the Anthropocene: the EAT–*Lancet* Commission on healthy diets from sustainable food systems

Walter Willett, Johan Rockström, Brent Loken, Marco Springmann, Tim Lang, Sonja Vermeulen, Tara Garnett, David Tilman, Fabrice DeClerck, Amanda Wood, Malin Jonell, Michael Clark, Line J Gordon, Jessica Fanzo, Corinna Hawkes, Rami Zurayk, Juan A Rivera, Wim De Vries, Lindiwe Majele Sibanda, Ashkan Afshin, Abhishek Chaudhary, Mario Herrero, Rina Agustina, Francesco Branca, Anna Lartey, Shenggen Fan, Beatrice Crona, Elizabeth Fox, Victoria Bignet, Max Troell, Therese Lindahl, Sudhvir Singh, Sarah E Cornell, K Srinath Reddy, Sunita Narain, Sania Nishtar, Christopher J L Murray

For an individual, an optimal energy intake to maintain a healthy weight will depend on body size and level of physical activity. Processing of foods such as partial hydrogenation of oils, refining of grains, and addition of salt and preservatives can substantially affect health but is not addressed in this table. *Wheat, rice, dry beans, and lentils are dry, raw. †Mix and amount of grains can vary to maintain isocaloric intake. ‡Beef and lamb are exchangeable with pork and vice versa. Chicken and other poultry is exchangeable with eggs, fish, or plant protein sources. Legumes, peanuts, tree nuts, seeds, and soy are interchangeable. §Seafood consist of fish and shellfish (eg, mussels and shrimps) and originate from both capture and from farming. Although seafood is a highly diverse group that contains both animals and plants, the focus of this report is solely on animals. ¶Unsaturated oils are 20% each of olive, soybean, rapeseed, sunflower, and peanut oil. ||Some lard or tallow are optional in instances when pigs or cattle are consumed.

Table 1: **Healthy reference diet, with possible ranges, for an intake of 2500 kcal/day**

	Macronutrient intake (possible range), g/day	Caloric intake, kcal/day
Whole grains*		
Rice, wheat, corn, and other†	232 (total gains 0–60% of energy)	811
Tubers or starchy vegetables		
Potatoes and cassava	50 (0–100)	39
Vegetables		
All vegetables	300 (200–600)	..
Dark green vegetables	100	23
Red and orange vegetables	100	30
Other vegetables	100	25
Fruits		
All fruit	200 (100–300)	126
Dairy foods		
Whole milk or derivative equivalents (eg, cheese)	250 (0–500)	153
Protein sources‡		
Beef and lamb	7 (0–14)	15
Pork	7 (0–14)	15
Chicken and other poultry	29 (0–58)	62
Eggs	13 (0–25)	19
Fish§	28 (0–100)	40
Legumes		
Dry beans, lentils, and peas*	50 (0–100)	172
Soy foods	25 (0–50)	112
Peanuts	25 (0–75)	142
Tree nuts	25	149
Added fats		
Palm oil	6·8 (0–6·8)	60
Unsaturated oils¶	40 (20–80)	354
Dairy fats (included in milk)	0	0
Lard or tallow‖	5 (0–5)	36
Added sugars		
All sweeteners	31 (0–31)	120

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Food in the Anthropocene: the EAT–*Lancet* Commission on healthy diets from sustainable food systems

Walter Willett, Johan Rockström, Brent Loken, Marco Springmann, Tim Lang, Sonja Vermeulen, Tara Garnett, David Tilman, Fabrice DeClerck, Amanda Wood, Malin Jonell, Michael Clark, Line J Gordon, Jessica Fanzo, Corinna Hawkes, Rami Zurayk, Juan A Rivera, Wim De Vries, Lindiwe Majele Sibanda, Ashkan Afshin, Abhishek Chaudhary, Mario Herrero, Rina Agustina, Francesco Branca, Anna Lartey, Shenggen Fan, Beatrice Crona, Elizabeth Fox, Victoria Bignet, Max Troell, Therese Lindahl, Sudhvir Singh, Sarah E Cornell, K Srinath Reddy, Sunita Narain, Sania Nishtar, Christopher J L Murray

The Lancet Commissions

Published **Online**
January 16, 2019
http://dx.doi.org/10.1016/S0140-6736(18)31788-4

Healthy diets have an appropriate caloric intake and consist of a diversity of plant-based foods, low amounts of animal source foods, unsaturated rather than saturated fats, and small amounts of refined grains, highly processed foods, and added sugars.

Dietary changes from current diets to healthy diets are likely to substantially benefit human health, averting about 10·8–11·6 million deaths per year, a reduction of 19·0–23·6%.

Transformation to healthy diets by 2050 will require substantial dietary shifts, including a greater than 50% reduction in global consumption of unhealthy foods, such as red meat and sugar, and a greater than 100% increase in consumption of healthy foods, such as nuts, fruits, vegetables, and legumes. However, the changes needed differ greatly by region.

sustainability. Our universal healthy reference diet largely consists of vegetables, fruits, whole grains, legumes, nuts, and unsaturated oils, includes a low to moderate amount of seafood and poultry, and includes no or a low quantity of red meat, processed meat, added sugar, refined grains, and starchy vegetables. Our definition of sustainable food production stays within safe planetary boundaries for six environmental processes that together regulate the state of the Earth system, and include climate change, land-system change, freshwater use, biodiversity loss, and interference with the global nitrogen and phosphorus cycles. Applying a global food system modelling framework, we show that it is possible to feed a global population of nearly 10 billion people a healthy diet within food production boundaries by 2050. However, this Great Food Transformation will only be achieved through widespread, multisector, multilevel action

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The 21st-century great food transformation

Tamara Lucas, Richard Horton

red meat: -50% or more (14 g/day)

legumes, nuts, fruit, vegetables: +100% or more

premature deaths: -23%

defeat death by starvation

impact on:

climate change
biodiversity loss
land-system use
freshwater use
nitrogen flow
phosphorus flow

prevention of human being

rehabilitation of the planet

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Published Online
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S0140-6736(18)33179-9
See The Lancet Commissions
page 447

Our connection with nature holds the answer, and if we can eat in a way that works for our planet as well as our bodies, the natural balance of the planet's resources will be restored. The nature that is disappearing holds the key to human and planetary survival.

prevention of human being

rehabilitation of the planet

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GIORNALE ITALIANO DI CARDIOLOGIA

EDITORIALE

Prevenzione per l'uomo, riabilitazione per il pianeta – un invito all'azione per i medici

Basterebbero due misure efficaci di prevenzione individuale (dimezzare il consumo di carne rossa e fare più attività fisica) per contrastare efficacemente il cambiamento climatico

Bruno Passaretti

Cardiologia Riabilitativa, Humanitas Gavazzeni, Bergamo

G Ital Cardiol 2021;22(6):452-455

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An integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent.

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Editorial

The One Health Approach—Why Is It So Important?

Tropical Medicine and Infectious Disease *Trop. Med. Infect. Dis.* **2019**, *4*, 88; doi:10.3390/tropicalmed4020088

It has become increasingly clear over the past three decades that the majority of novel, emergent zoonotic infectious diseases originate in animals, especially wildlife [1], and that the principal drivers of their emergence are associated with human activities, including changes in ecosystems and land use, intensification of agriculture, urbanisation, and international travel and trade [2–6]. A collaborative and multi-disciplinary approach, cutting across boundaries of animal, human, and environmental health, is needed to understand the ecology of each emerging zoonotic disease in order to undertake a risk assessment, and to develop plans for response and control.

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ACADEMIA MEDICINE

Brief Communications
Published: 2023-10-31
https://doi.org/10.20935/AcadMed6106

One Health: potential synergy between infectious and toxic agents. The case of COVID-19

Jorge Herkovits[1,*]

1. Toward a holistic One Health

In the early years of the 21st century the One Health Initiative, related initially to the emerging zoonotic viruses resulting in extensive human mortality, became a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of healthcare for humans, animals, and the environment. Although scientists, governments, and international organizations such as the Food and Agriculture Organization (FAO), the World Health Organization (WHO), the World Organization for Animal Health (WOAH) formerly known as (OIE), and the United Nations Environmental Program (UNEP), and financial institutions such as the World Bank recognized the close connections between humans, animals, and environmental health, the efforts were surpassed by the eruption of COVID-19, the pandemic that affected dramatically most countries. From a planetary health perspective in the last century, about half of the emerging infectious diseases of zoonotic origin resulted from changes in land use, agricultural practices, energy, and global exploitation of natural resources in order to respond to the growing human population's increasing demands for energy, foods, and other consumer products. Coincidently, the World Economic Forum's Global Risks Report acknowledged environmental degradation as the most significant risk of the origin of climate change, biodiversity loss, and the pandemic. As previously observed with EBOLA (1976), SARS (2003), the swine flu (2009), and MERS (2012), evidence suggests in the case of COVID-19 that the close contact between wild species and humans allowed the virus to cross between species

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ONE HEALTH

**Human health and animal health are interdependent.
At the same time, both depend on the environment.**

PNAS

PERSPECTIVE

OPEN ACCESS

Pandemic origins and a One Health approach to preparedness and prevention: Solutions based on SARS-CoV-2 and other RNA viruses

Gerald T. Keusch[a,1], John H. Amuasi[b,c,d], Danielle E. Anderson[e], Peter Daszak[f], Isabella Eckerle[g,h], Hume Field[f,i], Marion Koopmans[j], Sai Kit Lam[k], Carlos G. Das Neves[l,m], Malik Peiris[n], Stanley Perlman[o], Supaporn Wacharapluesadee[p], Su Yadana[f], and Linda Saif[q,1]

Edited by Xiang-Jin Meng, Virginia Polytechnic Institute and State University, Blacksburg, VA; received June 14, 2022; accepted August 18, 2022

Infectious diseases will continue to emerge or reemerge. RNA viruses, especially those with a propensity to mutate and/or recombine among strains affecting multiple host species (influenza A viruses and CoVs), pose a "clear and present danger." History shows that we have failed to heed the lessons from past EIDs, and science shows that the rate of emergence is accelerating. An integrated One Health strategy going forward offers the potential to mitigate emergence and implement rapid response when necessary to reduce impact.

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Veterinary World, EISSN: 2231-0916
Available at www.veterinaryworld.org/Vol.15/March-2022/27.pdf

REVIEW ARTICLE
Open Access

Antimicrobial resistance: One Health approach

Maria Elena Velazquez-Meza, Miguel Galarde-López, Berta Carrillo-Quiróz and Celia Mercedes Alpuche-Aranda

Centro de Investigación sobre Enfermedades Infecciosas, Instituto Nacional de Salud Pública, Cuernavaca, Morelos, Mexico.

In this research, a review of antimicrobial resistance (AMR) is conducted as part of the One Health approach. A review of publications, which included "antimicrobial resistance" and "One Health," was conducted. Among the global health problems, AMR is the one that most clearly illustrates the One Health approach. AMR is a critical global problem affecting humans, the environment, and animals. This is related to each of these three components due to the irresponsible and excessive use of antimicrobials in various sectors (agriculture, livestock, and human medicine). Improper management of antimicrobials, inadequate control of infections, agricultural debris, pollutants in the environment, and migration of people and animals infected with resistant bacteria facilitate the spread of resistance. The study aimed to analyze the problem of AMR from a health perspective to analyze the different actors involved in One Health.

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One Health approach to combat AMR

The One Health approach is fully integrated into global efforts to address the problem of AMR. Among the many obstacles to overcome are the competing interests of multiple economic sectors and organizations involved in animal, human, and environmental health. These actors need to agree on key priorities for action, the best ways to monitor AMR and control infections, and policies that should govern antimicrobial use. Key strategies for addressing AMR from the One Health approach are described:

1. Conduct a global public awareness campaign to educate our society about the harm caused by the overuse and misuse of antimicrobials. Implementing effective public campaigns can reduce the number of antimicrobials prescribed.
2. Improve and strengthen hygiene measures and prevent the spread of infections. By improving healthcare systems and living standards, we can significantly reduce the demand for antimicrobial and thus reduce the risk of the emergence of the new resistant strain.
3. Reduce the unnecessary use of antimicrobials in agriculture and their dissemination to the environment. Globally, the largest amounts of antimicrobials are consumed in agriculture and aquaculture. The use of antimicrobials as prophylaxis and growth promoters should be considered dangerous and unnecessary. Furthermore, it has been documented that animal excretes a significant percentage (75%–90%) of antimicrobials without being metabolized and dispersed into the environment.
4. Improve global surveillance of drug resistance. The medical and scientific community needs a clear understanding of current and historical data on AMR to clarify the new mechanisms of resistance acquisition, to know definitively current cases, and to predict future threats. To do so requires a better understanding of three areas: antibiotic consumption in humans and animals, current rates of antibiotic resistance, and a better understanding of the molecular basis of AMR.
5. Promote new and rapid clinical diagnoses. Misdiagnoses made in public or private hospitals lead to unnecessary antibiotic prescriptions. The development of rapid and accurate diagnostic tests will allow clinicians to administer antimicrobials to patients who need them.
6. Promote the development and use of vaccines and alternatives. The development of vaccines directed against antibiotic-resistant bacteria that cause serious infections will reduce the number of infected patients needing antimicrobial treatment. Additional investments are currently needed to develop new vaccines and alternatives to antimicrobials such as phage therapy, probiotics, antibodies, and lysins, among others.
7. Recognize and increase the number of people working with infectious diseases. Addressing AMR requires skilled professionals such as microbiologists, pharmacists, infectious disease specialists, nurses, infection control specialists, veterinarians, and epidemiologists. To do this, countries must invest in the training of this human resource.
8. A global innovation fund for early-stage research on new treatments. More public and private investments in drug discovery research are needed to develop new treatments. A global innovation fund is needed to support research that is not commercially attractive.
9. Create better incentives to promote investment in new drugs and in the improvement of existing drugs. The development of new antimicrobials is unattractive to pharmaceutical companies because there are still relatively effective antimicrobials on the market. It is difficult to predict exactly how and when AMR will develop, creating uncertainty for pharmaceutical companies when making business decisions.
10. Build a global coalition for real action against AMR. Global action is essential to make significant progress in the fight against AMR. Putting AMR on the international political agenda and addressing it using One Health approach is important to effect change [3].

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spero di avervi convinto...
in caso contrario c'è qualcuno molto più severo di me...

Grazie per l'attenzione

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