



What Happened to Moderation?

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Responsibility as a Healthcare Practitioner

Exercise



Extremes

Not Exercising

- Weight gain
- Chronic disease risk goes up.

Excessive Exercising

- Injuries: muscle strains, ligament tears, bone fractures
- Cardiovascular disease

Elite Athletes have shown lower testosterone levels compared to Non Elite Athletes

- Examined the temporal associations between individual changes in testosterone (T) and/or cortisol (C) concentrations, training motivation and physical performance in elite and non-elite trained men.
- Two male cohorts classified as elites (n = 12) and non-elites (n = 12) completed five testing sessions over a six-week period.
- The elite men reported higher motivation to train however compared to the non-elites they had lower pooled T levels ($p < 0.05$). No significant group differences in C concentrations,

Biol Sport. 2016 Sep;33(3):215-21. doi: 10.5604/20831862.1201810. Epub 2016 May 1. "Temporal associations between individual changes in hormones, training motivation and physical performance in elite and non-elite trained men." Crewther BT1, Carruthers J, Kilduff LP, Sanctuary CE, Cook CJ.

Endurance Exercise Training and Male Sexual Libido

- Participants with the lowest (OR = 6.9, 95% confidence interval [CI] = 2.6-17.9) and mid-range training intensities (OR = 2.8, 95% CI = 1.4-5.3) had greater odds of high/normal libido state than those with the highest training intensity.
- Participants with the shorter (OR = 4.1, 95% CI = 1.6-10.0) and mid-range training durations (OR = 2.5, 95% CI = 1.3-4.8) at their current intensity also had greater odds of high/normal libido score than those with a greatest duration.
- 1077 endurance athletes who engaged in frequent and strenuous exercise were likely to have low libido

Medicine and Science in Sports and Exercise 2017 Feb 13. *“Endurance Exercise Training and Male Sexual Libido.”* Hackney AC1, Lane AR, Register-Mihalik J, O'Leary CB

Cardiovascular damage resulting from chronic excessive endurance exercise

- Chronically training for and participating in extreme endurance competitions such as marathon and Iron-man distance triathlons can cause transient acute volume overload of the right atria and right ventricle
- With isolated events: transient reductions in right ventricular ejection fraction and elevations of cardiac biomarkers. Generally return to normal within seven to ten days.
- In extreme endurance athletes, this recurrent myocardial injury and repair can result in patchy myocardial fibrosis, particularly in the atria, intraventricular septum and right ventricle. Which has led to atrial and ventricular arrhythmias.
- Furthermore, chronic, excessive, sustained, high-intensity endurance exercise may be associated with **diastolic dysfunction, large-artery wall stiffening and coronary artery calcification.**

Why Moderate Exercise?

Physical activity/exercise is examined as primary prevention against 35 chronic conditions which includes: obesity, insulin resistance, type 2 diabetes, nonalcoholic fatty liver disease, coronary artery disease, peripheral vascular disease, hypertension, CVA, congestive heart failure, osteoarthritis, balance, osteoporosis, multiple cancers, constipation, gallbladder disease, DVT, dyslipidemia, erectile dysfunction.....

Compr. Physiol. 2012 April,2(2):1143-211, "Lack of exercise is a major cause of chronic diseases." Booth,FW, Roberts CK, Laye,MJ.

Recommended for Moderate Exercise

- Exercising 4 to 5 days a week for 30 to 60 minute exercise sessions.
- Cardiovascular exercise: attaining a heart rate of 70 to 85 % of maximum heart rate. (Interval training not in excess can also be considered an exercise in moderation)

Low Fats or Low Carbs

Low fat history

- Started with Ancel Keyes who looked at middle-aged male executives who were dying of heart attacks. This was the groundwork for “**The 7 Countries Study.**” A 50 year study that began in 1958 looking at patterns of heart attacks in those 7 countries. The results of the study showed that **serum cholesterol, blood pressure, diabetes and smoking** are universal risk factors for coronary heart disease.
- This study was the basis of the Mediterranean diet. It found that the countries of Italy and Greece had low incidences of CV disease.
- This was the beginning of fats being the evil demon in our diet.

Extremely low-fat-Dr. Esselstyn Documentary: "Forks over Knives"

- You may not eat anything with a mother or a face (no meat, poultry, or fish)
- You cannot eat dairy products
- You must not consume oil of any kind
- Generally you cannot eat nuts or avocados

AM J Med. March 2015 Mar; 128(3): 229-238. "The Mediterranean Diet, its Components, and Cardiovascular Disease." R.Jay Widmer, MD/PhD, et al

Drug News Perspect. 2008 Dec;21 (10):552-61. *FattyAcid Faccts, Part III: Cardiovascular Disease, Or, A Diet is fishy.*" Pauwels, EK, et.al.

Skeptics of the extreme low-fat

- The best randomized controlled trials we have for diet to prevent coronary artery disease have shown that supplementing diet with olive oil and nuts substantially lowers CAD.⁽¹⁾
- Observational studies in nutrition have demonstrated that fish consumption is associated with lower cardiovascular disease.⁽²⁾

1. *AM J Med.* March 2015 Mar; 128(3): 229-238. "The Mediterranean Diet, its Components, and Cardiovascular Disease." R.Jay Widmer, MD/PhD, et al

2. *Drug News Perspect.* 2008 Dec;21 (10):552-61. *FattyAcid Faccts, Part III: Cardiovascular Disease, Or, A Diet is Not fishy.*" Pauwels, et.al.

Low fat diets results in higher carbs

- Because everyone thought that fat was the root of all evil, all kinds of low-fat junk foods flooded the market.
- These foods were loaded with refined carbs, sugar and HFCS, which actually are associated with heart disease, diabetes, obesity and all those diseases that the low-fat diet was meant to treat.

Low Carb Diet

- Dr. Adkins' New Diet Revolution – 1972
- Ketogenic Diet

Adkins' 4 Phases

- **Phase 1 (Induction):** Under 20 [grams of carbs](#) per day for 2 weeks. Eat high-fat, high-protein, with low-carb vegetables like leafy greens. This kick-starts the weight loss.
- **Phase 2 (Balancing):** Slowly add more nuts, low-carb vegetables and small amounts of fruit back to your diet.
- **Phase 3 (Fine-Tuning):** When you are very close to your goal weight, add more carbs to your diet until weight loss slows down.
- **Phase 4 (Maintenance):** Here you can eat as many healthy carbs as your body can tolerate without regaining weight.

Ketogenic Diet

Keto Diet: 75% Fat, 20% Protein and 5% Carbs

Therapeutic Ketogenic Diet

- Seizures(1)
- Cancer(2)- Glioblastoma (Kris Smith, MD–Barrow Neurological Institute)

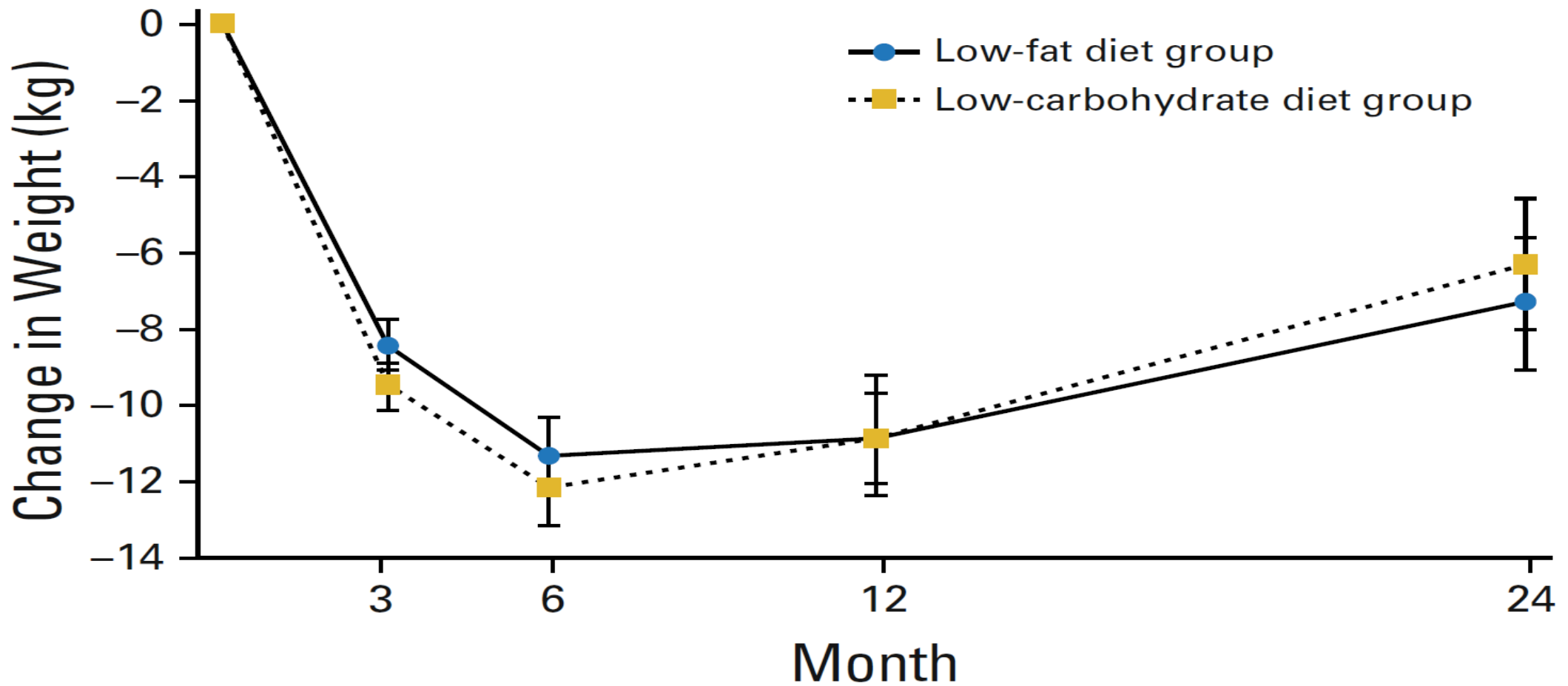
1. Wilder, RM. The Effects of ketonemia the course of epilepsy, *Mayo Clin Proc* 1921;2:307-8.

2. RJ Klement - Medical Oncology, 2017 - Beneficial effects of ketogenic diets for cancer patients: a realist review with focus on evidence and confirmation

Additional effects with Ketogenic diet

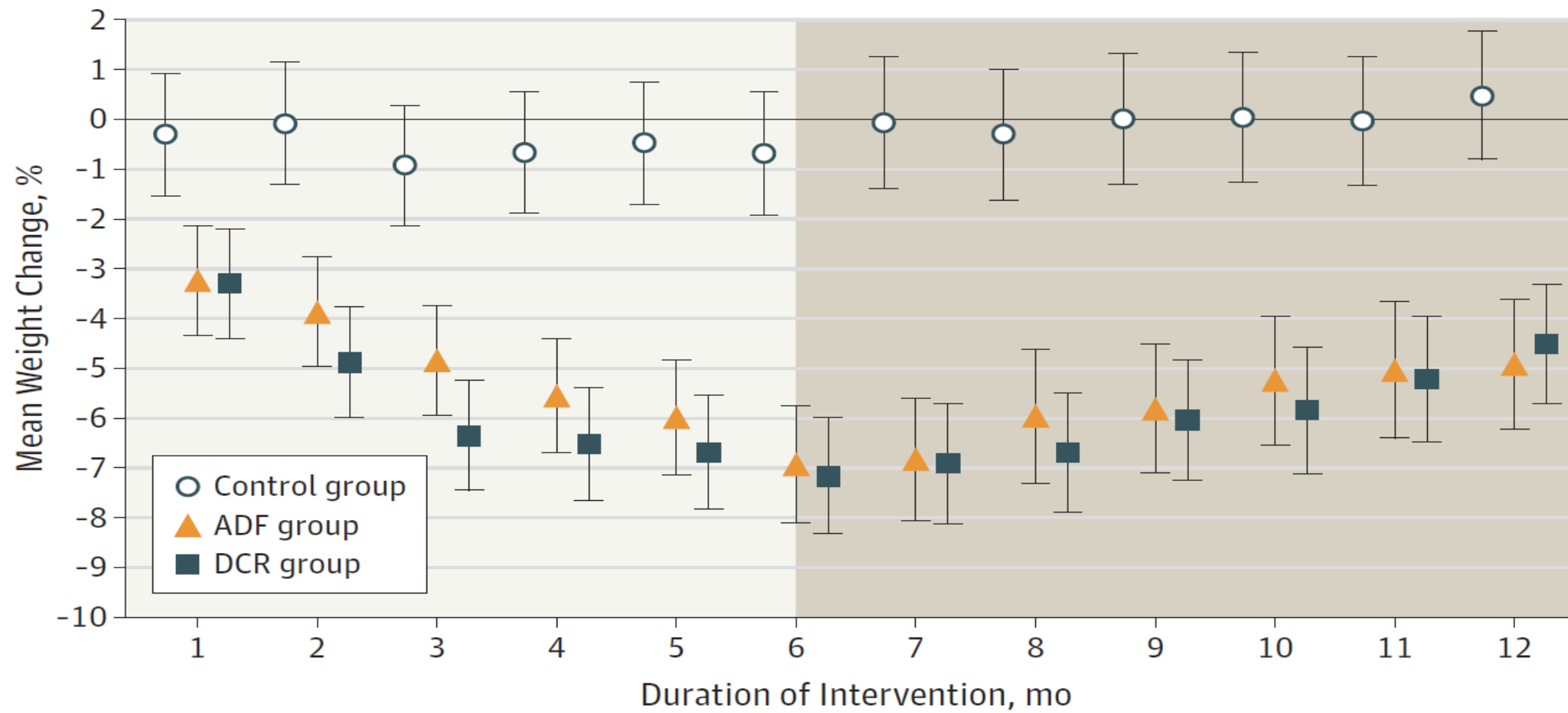
- Weight Loss-Decreased appetite(1)
- Affects on lipids: children: increase of TC, LDL, VLDL, triglycerides, and decrease of HDL.(2) In adults results have been mixed. Paradox of hypercholesterolemia and highly trained keto-adapted athletes: shown increased LDL and HDL but decreasing particle number.(3)

1. Stubbs B.J., Cox P.J., *Obesity*. "A Ketone ester drink lowers human ghrelin and appetite." 2018 Feb;26(2):269-2732.
2. Kwiterovich, P.O., Vinin, E.P. *JAMA*. "Effects of a high fat ketogenic diet on plasma levels of lipids, lipoproteins, and apolipoprotein in children." 2003;290(7):912-920.
3. Brent C Creighton¹, Parker Neil Hyde, *BMJ: open Sports and Exercise Med*. "Paradox of hypercholesterolaemia in highly trained, keto-adapted athletes." 2018; Vol.4 Issue1



[Ann Intern Med.](#) 2010 Aug 3;153(3):147-57. "Weight and metabolic outcomes after 2 years on a low-carbohydrate versus low-fat diet: a randomized trial."

[Foster GD](#) et al.



Trepanowski et al. *JAMA Int. Med* 2017

Supplements

Supplements Needs

- Poor dietary intake
- Poor absorption of vitamins and supplements.

Excess Vitamins and Supplements

- Excess in vitamins K, A, D, or E, can cause toxicities because they are fat-soluble and can hang around
- 20% of hospital drug-related liver injuries are do to dietary supplements.

Liver Int. 2011 May;31(5):595-605. Epub 2011 Jan 11. *“Review of liver injury associated with dietary supplements.”* [Stickel F1](#), [Kessebohm K](#), [Weimann R](#), [Seitz HK](#).

Multiple Vitamins

- In general, vitamin supplementation is not necessary for most adults who eat a balanced diet. A balanced diet with fruits and vegetables promotes health not only by providing known vitamins, but also because it contains fiber and other less well-defined nutrients
- Data on total mortality rates for those individuals using a multivitamin showed neither an increased risk or a lower risk in the groups with multivitamin/mineral supplement use.

Han-Yan Huang, et al., Am J Clin Nutr January 2007. vol. 85

Vitamin Recommendations

- Vitamin D for those who have little or no sun exposure
- In women who could become pregnant, recommend supplementation with folic acid

Cleanliness

Cleanliness

- Until 100 years ago infectious disease was the leading cause of death
- Decrease in infant mortality: Lincoln and Jefferson
- Starting in the 1940s we were all told that infection is causing all the ills of the world. It was the beginning of people bleaching everything

Cleanliness

- Drinking water: cleaning this up improved health and decreased water borne diseases such as dysentery.
- Hospital: operating suite cleanliness decreased postoperative infection.
- In hospitals sterile techniques decreased postpartum infections

Antibacterial soap Triclosan

- Appears to be an endocrine disrupter. In rats, frogs and other animals this antibacterial interferes with the body's regulation of thyroid hormone. It chemically resembles a hormone closely enough that it binds with the thyroid receptor site.
- Evidence in children shows it may increase allergy risk.
- May interfere with muscle contraction
- In 2008 triclosan was found in the urine of 75% of the people tested.
- In Sept. 2016 the FDA issued a rule banned the use of triclosan, triclocarban and 17 other chemicals in hand and body washes, which were marketed as being more effective than simple soap.



Antibiotics

In 1967 then Surgeon General, William H. Stewart, MD, said “Its time to close the books on infectious diseases, declare the war against pestilence won, and shift national resources to such chronic problems as cancer and heart disease.”

Kibera, Kenya, health experts have found a direct correlation between poor hygiene and infections that plague most household

In Kenya, Miracle Drugs Do More Harm Than Good

By **ANDREW JACOBS**
and **MATT RICHTEL**

NAIROBI, Kenya — Four days after her toddler's health took a turn for the worse, his tiny body racked by fever, diarrhea and vomiting, Sharon Mbone decided it was time to try yet another medicine.

With no money to see a doctor, she carried him to the local pharmacy stall, a corrugated shack near her home in Kibera, a sprawling impoverished community here in Nairobi. The shop's owner, John Otieno, listened as she described her 22-month-old son's symptoms and rattled off the pharmacological buffet of medicines he had dispensed to her over the previous two weeks. None of them, including four types of antibiotics, were working, she said in despair.

Like most of the small shopkeepers who provide on-the-spot diagnosis and treatment here and across Africa and Asia, Mr. Otieno does not have a pharmacist's de-

DEADLY GERMS, LOST CURES

The Peril of Cheap Antibiotics

gree or any medical training at all. Still, he confidently reached for two antibiotics that he had yet to sell to Ms. Mbone.

"See if these work," he said as she handed him 1,500 shillings for both, about \$15.

Antibiotics, the miracle drugs credited with saving tens of millions of lives, have never been more accessible to the world's poor, thanks in large part to the mass production of generics in China and India. Across much of the developing world, it costs just a few dollars to buy drugs like amoxicillin, a first-line antibiotic that can be used against a broad range of infections, from bacterial pneumonia and chlamydia to salmonella, strep throat and Lyme disease.

Kibera residents are prodigious consumers of antibiotics. One study found

that 90 percent of households in Kibera had used antibiotics in the previous year, compared with about 17 percent for the typical American family.

But the increasing availability of antibiotics has accelerated an alarming downside: The drugs are losing their ability to kill the germs they were created to conquer. Hard-wired to survive, many bacteria have evolved to outsmart the medications.

And as these mutant bacteria commingle with other pathogens in sewage canals, hospital wards and livestock pens, they can share their genetic resistance traits, making other micro-organisms impervious to antibiotics.

Antibiotic resistance is a global threat but it is often viewed as a problem in rich countries, where comfortably insured patients rush to the doctor to demand prescriptions at the slightest hint of a cough or cold.

In fact, urban poverty is a huge and

Continued on Page A6

Fungus Immune to Drugs Secretly Sweeps the Globe

Lethal Infection Adds Alarming Dimension to Dangers of Overusing Medicines

By MATT RICHTEL and ANDREW JACOBS

Last May, an elderly man was admitted to the Brooklyn branch of Mount Sinai Hospital for abdominal surgery. A blood test revealed that he was infected with a newly discovered germ as deadly as it was mysterious. Doctors

a new example of one of the world's most intractable health threats: the rise of drug-resistant infections.

For decades, public health experts have warned that the overuse of antibiotics was reducing the effectiveness of drugs that have lengthened life spans by curing bacterial infections once commonly fatal. But lately, there has been an explosion of resistant fungi as well, adding a new and frightening dimension to a phenomenon that is undermining a pillar of modern medicine.

"It's an enormous problem," said Matthew Fisher, a professor of fungal epidemiology at Imperial College London, who was a co-author of a recent scientific review on the rise of resistant fungi.

DEADLY GERMS, LOST CURES

A New Public Health Threat

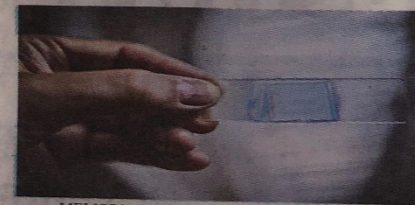
swiftly isolated him in the intensive care unit.

The germ, a fungus called *Candida auris*, preys on people with weakened immune systems, and it is quietly spreading across the globe. Over the last five years, it has hit a neonatal unit in Venezuela, swept through a hospital in Spain, forced a prestigious British medical center to shut down its intensive care unit, and taken root in India, Pakistan and South Africa.

Recently *C. auris* reached New York, New Jersey and Illinois, leading the federal Centers for Disease Control and Prevention to add it to a list of germs deemed "urgent threats."

The man at Mount Sinai died after 90 days in the hospital, but *C. auris* did not. Tests showed it was everywhere in his room, so invasive that the hospital needed special cleaning equipment and had to rip out some of the ceiling and floor tiles to eradicate it.

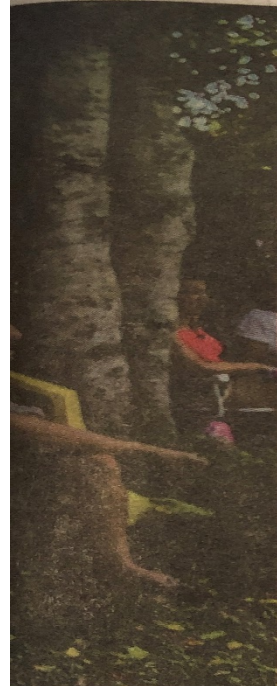
"Everything was positive — the walls, the bed, the doors, the cur-



MELISSA GOLDEN FOR THE NEW YORK TIMES

A slide with inactive *Candida auris* taken from a patient.

"We depend on being able to treat those patients with antifungals. Simply put, fungi, just like bacteria, are evolving defenses."



DIETRI FOR THE NEW YORK TIMES

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Multiple Drug Resistant Bacteria

- MRSA
- Clostridium difficile
- Enterococcus (formally group D)
- CRE (carbapenem-resistant enterobacteriaceae)
- Actinetobacter baumannii. (about 12,000 people get this infection in hospitals every year)

Antibiotics Usage per the CDC

- Must be more discretionary on the usage of antibiotics. Antibiotics do not kill a cold virus!
- Finish the complete course of antibiotics

ADHD

ADD/ADHD

- 3 types: Inattentive, hyperactive–impulsive, and combined.
- Now nearly 1 in 5 high school boys have been diagnosed with ADHD
- In 2013 the DEA said American Manufacturers produced 210 tons of legal speed. United States produces 70% of the world's legal amphetamines (\$9 billion)

Article in *Huffington Post* by Dr. Lawrence Diller at UCSF

Antidepressants

Antidepressants

- Third most frequently taken medication in United States
- Estimated that 8-10% of the population is taking an antidepressant.
- 11% of Americans ages 12 and over are on antidepressants
- Women are more likely to take antidepressants than men.
- Whites are more likely to take antidepressants than non-whites

Scientific American Mind (MENTAL HEALTH archives.) "The Rise of All-Purpose Antidepressants. Doctors are increasingly prescribing SSRIs to treat more than just depression." By Julia Calderone, November 1, 2014.

NCHS Data Brief. 2011 Oct;(76):1-8. "Antidepressant Use in Persons Aged 12 and Over: United States, 2005-2008." Pratt, L.A., Brody, D.J., Gu, Q.

Antidepressants

- Usage of any depresses began in the 1950s with iproniazid, a monoamine oxidase inhibitor that was used for TB, and imipramine the first drug in the tricyclic antidepressant family. They had significant side effects.
- Prozac was introduced to the public in 1986, which had significantly less side effects.
- With the SSRIs science decided depression was a chemical imbalance and therefore you had to take medication

Proton Pump Inhibitors

- Malabsorption: especially magnesium and calcium. Leads to increased fracture risk.
- Some evidence of iron and B12 deficiency

“Effects of Proton Pump Inhibitors on Calcium Carbonate Absorption in Women: A Randomized Crossover Trial.” O’Connell, M.B., Madden, D.M., Murray, A.M., Heaney, R.P., Kerzner, L.J., Am J Med. 2005;118(7):778.

“Long-Term Proton Pump Inhibitor Therapy and Risk of Hip Fracture.” Yang, Y.X., Lewis, J.D., Epstein, S., Metz, D.C. JAMA. 2006;296(24):2947.

Hess, M.W., Hoenderop, J.G., Bindels, R.J., et al. “Systematic Review: “Hypomagnesaemia Induced by Proton Pump Inhibition.” Aliment Pharmacol Ther 2012;36:405–41.

Proton Pump Inhibitors

- Increased infection risk: C. Diff., SIBO and pneumonia (pathogens easier to colonize the upper gastrointestinal tract)
- Dementia?

Clinical Gastroenterology and Hepatology 2013;11:458–464. Perspectives in Clinical Gastroenterology and Hepatology. “Reported Side Effects and Complications of Long-Term Proton Pump Inhibitor Use: Dissecting the Evidence.” David A. Johnson and Edward C. Oldfield IV.

“Association of Proton Pump Inhibitors with Risk of Dementia: A Pharmacoepidemiological Claims Data Analysis.” Willy Gomm, PhD¹; Klaus von Holt, MD, PhD; et.al. JAMA Neurol. 2016;73(4):410-416.

Opiates

- Today opioid overdose accounts for 63 percent of drug related deaths.
- The Center for Disease Control estimates that 72,287 people died from drug overdoses in 2017, an increase of about 10 percent from the year before. A majority of the deaths—nearly 49,000—was caused by opioids.
- The number of prescriptions per million increase from 97 million in 1997 to 219 million in 2011⁽¹⁾.

1. National Institute on Drug Abuse. “America’s Addiction to Opioids: Heroin and Prescription Drug Abuse.” May 14, 2014. presented by Nora D. Volkow, MD., Senate Caucus on International Narcotics Control.

The 5th Vital Sign

1990 when Dr. Mitchell Max, who was the President of the American Pain Society, wrote in the *Annals of Internal Medicine*.

- *Patients failed to let their medical care providers know they were in significant pain.*
- *Nurses did not have the ability to adjust dosage.*
- *Doctors were reluctant to use opiates.*
- *Pain was “invisible.” Information about the patient’s pain was not displayed in their medical chart*
- *Physicians were not held accountable for inadequate pain control.*

Max, M.B. “Improving Outcomes Of Analgesic Treatment: Is Education Enough?” *Ann Intern Med*. 1990 Dec 1;113(11):885-9.)

Recommendations from the American Pain Society

- Hospital charts should clearly document the intensity of a patient's pain and the specific medications that were being used to treat the patients pain.
- A simple, valid measure of pain intensity should be selected by each unit
- Each clinical unit should identify values for pain intensity rating and pain relief rating that will elicit a review of the current pain therapy.

Opiates

- A numeric pain scale became “mandatory” in the post-anesthesia care unit (PACU), and an “acceptable” pain score was required for discharge from the PACU.(1)
- The average consumption of opiates per patient increased from 40.4 mg (morphine equivalents) in 2000 to 46.6 mg in 2002, with the greatest increase in the PACU (6.5 mg to 10.5 mg).(2)

1. Anesth Analg. 2005 Jan;100(1):162-8. “The Impact of The Joint Commission. For Accreditation Of Healthcare Organizations Pain Initiative on Perioperative Opiate Consumption and Recovery Room Length of Stay.” Frasco PE1, Sprung J, Trentman TL.

2. “The Joint Commission’s Pain Standard: Origins and Evolution” by David Baker MD, MPH, Executive VP Division of Healthcare Quality Evaluation May 5, 2017.

OxyContin Enters the World of Opioids

- Purdue Pharma gave \$200,000 to the VA and promoted poorly done studies showing that OxyContin rarely caused addiction(1).
- The Food and Drug Administration (FDA) approved labelling saying that iatrogenic addiction was “very rare” and that the delayed absorption of OxyContin reduced the abuse liability of the drug.

1. Am J Public Health. 2009 February; 99(2): 221–227. “The Promotion and Marketing of OxyContin: Commercial Triumph, Public Health Tragedy.” Art Van Zee, MD.

Opiates

- Purdue Pharma Agreed to pay \$270 Million in a settlement with Oklahoma.
- This is the first of more than 1,600 lawsuits pending against Purdue Pharma.

Responsibility as a Healthcare Practitioner

What Happened to Moderation?



A Common-Sense Approach
to Improving Our Health
and Treating Common Illnesses
in an Age of Extremes

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