Body Hacking and the Quest to Cure Death

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Setting the Scene

• I’m not a doctor, and I don’t play one at conferences

• “Never believe anything you read on the Internet”
  - Abraham Lincoln

• This is the Real World™, not everything is black & white

• Good luck. The clock starts .... now!
In the Beginning
Ancel Keys &
the Seven Countries Study

Ancel Keys & the Full 22 Countries

Why stop at 22 countries?
Can you see the problem?
One thing led to another …

How’s that working out for you? - obesity

How’s that working out for you? - diabetes

Diabetes: It’s worse than you thought, because it could be better than you think
http://www.meinsurancereview.com/Magazine/Magazine-Articles/mgid/341/cid/10053
Simply stated, diabetes is a disease of excess carbs, and we need to understand this in order to fix underwriting, pricing & wellness

China: Burden of diabetes-mortality to grow

This study shows a strong association between diabetes & all-cause mortality (1,373 vs 646), resulting in 9-year shorter lifespan

How’s that working out for you? - cancer


http://www.bmj.com/content/356/bmj.j477
How’s that working out for you? – cardio vascular

http://www.heart.org/HEARTORG/Advocate/Cardiovascular-Disease-A-Costly-Burden-for-America_UCM_491316_Article.jsp
How’s that working out for you? - insulin

Because eating this way isn’t Difficult... Dealing with a complication from Diabetes is.
But surely doctors don’t make mistakes?
And how could such a deadly myth persist?

• Lipitor is a ‘statin’ which has lipid-lowering effects, prescribed ostensibly to prevent heart attacks
• Over the period when it had patent protection, Lipitor earned about $131 billion in cumulative sales, which is more than twice that of the drug in the number 2 spot
• An 11-digit revenue for one drug, let alone the rest of that class of drugs? What could go wrong?

http://www.drugsdb.com/blog/the-5-most-profitable-medications-ever-produced.html#ixzz4gQ453Gry
But didn’t they do other studies?

• That’s the problem, when you do experiments with specific goals in mind, for example:
  – Nikolai Anitschkow fed rabbits purified cholesterol (from animal products) and managed to get their cholesterol levels over 1000 mg/dl (4-5 times higher than an average human)
  – He noticed vascular lesions forming in the arteries, resembling human atherosclerosis
  – Therefore ... cholesterol causes heart attacks! Right??
  – BUT no-one seemed bothered that rabbits are herbivores
  – And people forgot to mention that similar experiments performed on dogs & rates (omnivores, who can process animal products) produced no lesions

But what if …

• ... doctors have been getting it wrong all along?
• ... medical underwriting is similarly flawed?
• ... we’re loading & declining the wrong people?
• ... insurers pay for medicines that kill policyholders?
• ... insurers are complicit in passing on ‘bad’ advice?
• ... we start getting it right, and annuitants don’t die?

What if you live a much longer healthier happier life?
Bodyhacking (or Biohacking or DIY Biology)
My own n=1 experiment

- Family history
- “Hacking cholesterol”
- But butter?
- 3 months ketogenic
- Insurance realisation

• We like to log things
• Literally: Quantified. Self.
• Tech makes it easier
• Hack. Quantify. Repeat
It can get really detailed!

Much more at: http://quantifiedself.com/docs/ShannonConnersPoster.pdf
Quantification is big business
Wearables. Because Wellness Programs.

Participation in health/fitness programs reduces health claims by 16%. Logging fitness activities reduces risk by 22% for the unhealthiest participants. Active members are up to 64% less likely to lapse their insurance, and have up to 53% lower mortality. The only trouble is that participation in such programs remains low, with opt-in rates in some cases just 5% of those eligible to join.

https://www.linkedin.com/pulse/case-connected-wearables-insurance-andrew-dart
Maybe you are an (accidental) bodyhacker?

- Multivitamins, other supplements, Omega 3
- Weight loss – exercise & diets
- Coffee when you’re tired
- Cooking with coconut oil (did you hear it’s healthier?)
- Orange lenses for dyslexia
- Red lights at night before bed (or installing f.lux)
- Dual N-back to improve your ‘fluid intelligence’
- Stem Cell & CRISPR therapy do not count as ‘DIY’
Deliberate Bodyhacking

• Combining n=1 with self-quantification
  – alcohol & sleep quality
  – creatinine & muscle gain
  – butter & brain games
  – low carb / high fat (LCHF) & …
    • weight, blood lipids, insulin sensitivity, blood sugar
  – fasting & cancer markers
• And we’ve witnessed the research dollars follow!
Major Screw-ups
News Flash: this is no longer controversial
Our diets have been deadly

• You’ve seen the graphs
• And yes I know … correlation isn’t causation
• But even physiologically, we see the same thing
• Quick medical lesson:
  – Fat intake: cholesterol, progenerolone, brain, myelin, polyunsaturated, breast milk …
  – Carbs: sugar, insulin, fat storage, sensitivity, fruit …
  – Inflammation  http://www.newyorker.com/magazine/2015/11/30/inflamed
Source: thousands of pages
Nutritionism’s Great Blunders

• **FAT** has been vilified – *but what is ‘fat’?*
  – At least trans fats are to be banned
    • But saturated fats are essential
      – And vegetable oils are inflammatory
        » Fat from grass-fed cows is better
          • Short-chain? Medium? Long?
            • Cooking or consumption?

• “Fruit **and** Vegetables” isn’t a thing either

https://intensivedietarymanagement.com/nutritionisms-great-blunder/
Cut the CRaP

• Calorie Restriction as Primary
• Such diets are hard to follow but at least they’re ineffective (sic) 😏
• Big Sugar* has a vested interest in you believing that the reason there are fat people, is because they don’t exercise enough
• Rather: Fridge & Freezer analogy
Cholesterol is not the Devil

• Quick medical lesson:
  – HDL, LDL, VLDL, triglycerides, HDL/Trigs, 80% from the liver
• We need cholesterol
• Proof of claimed correlation with heart disease/death??
• No longer in US guidelines
• Low cholesterol & cancer?

https://www.sciencedaily.com/releases/2012/03/120326113713.htm
Lots of research comes out each week

- Independent Japanese paper [https://www.karger.com/Article/Pdf/381654](https://www.karger.com/Article/Pdf/381654)
- Rethink emphasis on low saturated fat to save hearts (RT’d by Mayo Clinic) [http://www.reuters.com/article/us-health-heart-prevention-idUSKBN17U2PJ?linkId=37014425](http://www.reuters.com/article/us-health-heart-prevention-idUSKBN17U2PJ?linkId=37014425)
- Saturated fat doesn’t clog arteries: heart disease is inflammatory condition, risk can be reduced from healthy lifestyle interventions [http://bjsm.bmj.com/content/early/2017/03/31/bjsports-2016-097285](http://bjsm.bmj.com/content/early/2017/03/31/bjsports-2016-097285)
- Evidence that supports the prescription of low-carbohydrate high-fat diets: a narrative review [http://bjsm.bmj.com/content/51/2/133.full.pdf+html](http://bjsm.bmj.com/content/51/2/133.full.pdf+html)
And it just keeps on coming …

• Chance of colon cancer recurrence nearly cut in half in people who eat nuts
  https://www.sciencedaily.com/releases/2017/05/170518085129.htm

• Dietary fat guidelines have no evidence base: where next for public health nutritional advice?
  http://bjsm.bmj.com/content/51/10/769

• 6 Reasons Why a Calorie is NOT a Calorie
  https://authoritynutrition.com/6-reasons-why-a-calorie-is-not-a-calorie/

• What should the doctor order? How physicians can help stem rising healthcare costs

• Active Invasion of Oral & Aortic Tissues by Porphyromonas gingivalis in Mice Causally Links Periodontitis & Atherosclerosis
  http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0097811

• Insulin Resistance and High Carbohydrate Diets
  https://www.youtube.com/watch?v=lGKX8HoNb-0

• Swiss Re Medical Updates Newsletter

• Diabetes & Insurance
  http://www.meinsurancereview.com/Magazine/Magazine-Articles/mgid/341/cid/10053

• PURE: https://www.ncbi.nlm.nih.gov/pubmed/28864332
  “Associations of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries from five continents: a prospective cohort study”
  “135,000 people. Increased carbohydrate intake was associated with a 28% increase in mortality. Increased total fat intake was associated with a lower risk of total mortality”
If not cholesterol then what?

- Oxidation & Calcium deposits
- Coronary Artery Calcium Score
- Current meta-studies failing to find a correlation between cholesterol & mortality, but CAC ➔
- If I were a HNW underwriter …

PS. Take some Vitamin K2 [https://chrismasterjohnphd.com/2016/12/09/the-ultimate-vitamin-k2-resource/](https://chrismasterjohnphd.com/2016/12/09/the-ultimate-vitamin-k2-resource/)
Statins for lowering Cholesterol

• Conflicting claims on benefits & side-effects
• If cholesterol isn’t the problem, then why bother?
  – The recent ACCELERATE trial dumbfounded many experts by failing to demonstrate any cardiovascular benefit despite dramatically lowering LDL and raising HDL in high risk patients with coronary disease http://www.medscape.com/viewarticle/875261
  – Amgen share price: PCSK9 inhibitors have bombed, Repatha produced a massive drop in LDL cholesterol and a small drop in soft end points, and produced a ns small rise in total & cardiovascular mortality. The study was stopped early https://high-fat-nutrition.blogspot.co.uk/2017/03/amgen-share-price-and-pcsk9-inhibition.html
• Doctors are prescribing statins at lower & lower cholesterol values!
• Insurance companies are paying for these drugs, and being affected by what happens to the health of their policyholders
Diabetes is just Diabetes?

- Why so much emphasis on #LCHF?
  - because diabetes can be cured!
- Insulin insensitivity is key to diabetes
- Diabetes: heart attack, blindness, amputation
- Cancer correlates with HOMA-IR & high insulin
  https://www.researchgate.net/publication/277325210_ASSOCIATION_BETWEEN_HOMA-IR_AND_CANCER
- Alzheimer's is Type 3 Diabetes
  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2769828/
- If I could only underwrite on one blood test …
All the evidence points to …
Supplementation is part of not dying

• Again, there are conflicting opinions out there
• Increasing about of independent research & n=1
  – https://examine.com
  – https://selfhacked.com
• We’re not talking about eliminating scurvy, we’re talking about curing death
We are each 50% human & 50% bacteria

- Microbiome - gut/brain connection
- 90% of serotonin lies in your gut
  - [https://en.m.wikipedia.org/wiki/Enteric_nervous_system](https://en.m.wikipedia.org/wiki/Enteric_nervous_system)
- Gut microbes switch genes on & off under influence of diet
- Fecal transplants
- Pro-biotics & Pre-biotics
Hormesis
(what doesn’t kill you just makes you stronger)

• Obvious examples – alcohol & exercise
• Stresses can be **processes**
  – heat & cold, hypergravity, food limits, bone pressure
• Or **substances**
  – turmeric, pro-oxidants
• Remember there is a U-shaped response curve, more is definitely **not** always better
Cold showers have another purpose

- It’s not about shivering away calories
  - https://examine.com/nutrition/can-you-lose-weight-by-turning-down-the-heater/
- White vs Brown Fat
- Parasympathetic nervous system
- Anti-inflammatory
- Ice baths & Cryo-baths
- Wim ‘The Iceman’ Hof
Exercise

• Muscle loss is a big problem with ageing: build it now
• Cardio-vascular: many benefits
• Flexibility: shouldn’t be ignored, affects both above
• Passive: inversion boots, vibration plates
• HIIT: most effective from an anti-ageing point of view
Ageing: we can do better than ‘square the curve’

Implications
These myths are killing your policyholders (and making them sick)

• It’s not just about ‘charging enough’, it’s about caring for our policyholders’ best interests

• Are insurers complicit if they’re giving bad advice in their wellness programs, or no advice at all?

• And if insurers are paying, for example, for statins that people don’t need (perhaps even hurting them)?

• If you insure longevity, you have some other problems
And yes, it’s costing you money too

- Nearly 50% of Americans have diabetes or pre-diabetes
- T2DM can be reversed in many or most cases
- #LCHF intervention works so fast that we can literally pull people off 100s of units of insulin in days or weeks
- Compare 50+50 patients → save USD2000 pa diabetes meds
- LCHF -500, Traditional +350 units
- Lucky for Big Pharma that ‘old’ advice increases insulin needs and progresses the diabetes

Reversing Type 2 Diabetes starts with ignoring the guidelines
https://youtu.be/da1vvigy5tQ
How might medical underwriting be different?

• Cholesterol, Blood sugar, Insulin sensitivity
• ESR, CRP, Fibrinogen, etc.
• Vitamin D, Omega 6 to 3 ratio
• CAC (Coronary Artery Calcium Score)
• Genetic testing – can’t use, can’t ignore

Remember there is a difference between underwriting in order to put people on a scale, in order to identify current/future problems, in order to eliminate anti-selection.
When the world catches on

- Reduced mortality & morbidity
  - good news for humans
  - pricing & valuation may be quick to adapt
  - maximum entry ages
- Extended longevity
  - annuities and pension funds
  - global dependency ratios
  - government finances
How did we even get here?
Big Pharma

• From 2013/08 to 2014/12, $3.5b was paid to 681,432 US physicians by 1630 pharmaceutical companies to promote numerous drug products [http://www.bmj.com/content/357/bmj.j1855](http://www.bmj.com/content/357/bmj.j1855)

• Virtually all continuing medical education in the US is sponsored heavily by Big Pharma giving them huge influence over what information is presented to doctors [https://intensivedietarymanagement.com/big-pharma-behind-scenes/](https://intensivedietarymanagement.com/big-pharma-behind-scenes/)

Big Sugar (BS)

- **Propaganda?**
  - They promotes “Energy Balance” (CRaP)
  - “Physical activity” not exercise, fitness, or weight loss
  - Emphasise the problem of obesity over metabolic syndrome
  - Chronic disease is “complicated”

- Coca-Cola & PepsiCo funded almost 100 health organisations over 5 years

  https://therussells.crossfit.com/2017/01/12/the-four-hallmarks-of-big-soda-bs-nutritional-propaganda/

  https://therussells.crossfit.com/2017/01/05/big-food-vs-tim-noakes-the-final-crusade/

  http://www.medicalnewstoday.com/articles/313363.php
Sugar is the new tobacco

The sweetest taboo

Jean Eu looks at the effects sugar has on human health and how its consumption is used as a rating factor in the underwriting process.

03 SEPTEMBER 2015 | BY JEAN EU
Conflicts of Interest – an example

- Dr. John Sievenpiper is one of the most outspoken defenders of dietary sugar, constantly in the media defending sugar.
- He receives money from the Corn Refiners Association, for example.
- In his paper in the Annals of Internal Medicine defending sugar, here’s his list of conflicts of interest:

  https://intensivedietarymanagement.com/big-pharma-behind-scenes/

Potential Conflicts of Interest:
- Dr. Sievenpiper: Grant (money to institution): Canadian Institutes of Health Research, Colicine Control Council; Support for travel to meetings for the study or other purposes: The Coca-Cola Company; Consultancy: Abbott Laboratories, International Life Sciences Institute (ILSI) North America, Archer Daniels Midland; Grants/grants pending (money to institution): The Coca-Cola Company, Travel/accommodations/meeting expenses associated to activities一流 (money to institution): The Coca-Cola Company, Pulse Canada, Canadian Diabetes Association; Other: Director of KOKO Consulting, Dr. de Souza: Grant, Canadian Institutes of Health Research; Grant (money to Institution): Colicine Control Council, Canadian Institutes of Health Research; Expenses pending (money to Institution): The Coca-Cola Company, Dr. Beyer's (Grant) (money to institution): Canadian Institutes of Health Research, Colicine Control Council, Grantees/grants pending (money to institution): The Coca-Cola Company, Mt. Chiricahua's (Grant) (money to institution): a clinical research coordinator at Glycemic Index Laboratories; Dr. A. Jenkins: Grant (money to institution): Canadian Institutes of Health Research, Employment: Part owner and Director of Research at Glycemic Index Laboratories; Grantees/grants pending (money to institution): Canadian Diabetes Association, Travel/accommodations/meeting expenses associated to activities一流 (Canadian Diabetes Association; Dr. W. Lieben: Grant (money to institution): Canadian Institutes of Health Research; Board membership: Glycemic Index Laboratories, Consultancy: McCain Foods, Temescal Polymetrics; Employment: Glycemic Index Laboratories, Glycemic Index Testing; Grantees/grants pending (money to institution): Canadian Institutes of Health Research, Dairy Farmers of Canada, Canadian Diabetes Association, Payment for lectures including service on speakers bureau: Northwestern University, Loyola; Phillip Sandall Publishing Services, OIB Publishers; Travel/accommodations/meeting expenses associated to activities一流 (Royal Society of London, Glycemic Index Symbol program, CMC Nutrition AG, McMaster University, Canadian Society for Nutritional Sciences, National Sports and Conditioning Association, Faculty of Public Health Nutrition—Autonomous University of Nuevo Leon, Diabetes and Nutrition Study Group of the EASD; Dr. Kendall: Grant (money to institution): Canadian Institutes of Health Research, Colicine Control Council, Grantees/grants pending (money to institution): The Coca-Cola Company, Almond Board of California, International Tree Nut Council, Barilla, Sola, Unilever, Saskatchewan Pulse Growers, Pulse Canada; Payment for lectures including service on speakers bureau: Danone, Almond Board of California, Kellogg, Solar, Travel/accommodations/meeting expenses associated to activities一流 (International Tree Nut Council, Saskatoon Pulse Growers, Pulse Canada; Dr. D. Jenkins: Grant (money to institution): Barilla, Sola, Unilever, Haine Celestial, Loblaw Supermarkets, Sanitarium Company, Almond Board of California, Orafti, Canadian Institutes of Health Research, Canadian Foundation for Innovation, Ontario Research Fund, Advanced Foods and Material Network; The International Tree Nut Council Nutrition Research & Education; The Peanut Institute Consulting on an honorarium: Solar, Cliozyz Preservative Trust, Almond Board of California, Kellogg, Quaker Oats, Procter and Gamble Technical Centre Limited, The Coca-Cola Sugar Advisory Board, Griffin Hospital for the development of the NaVo System, Abbott Laboratories, The Canola and Flax Councils of Canada, Soy Advisory Board of Dean Foods, The California Strawberry Commission, The International Tree Nut Council Nutrition Research & Education, The Peanut Institute, Barilla, Unilever, Haine Celestial, Loblaw Supermarkets; Support for travel to meetings for the study or other purposes: Almond Board of California, The International Tree Nut Council Nutrition Research & Education, The Peanut Institute, Agro Soy Foundation, Soy Advisory Board of Dean Foods, Board membership: Loblaw Supermarkets, Sanitarium Company, Heritas International; Nutritional Fundamentals for Health, Pacific Health Laboratories, Mitagenics/Metalthromics, Bayer Consumer Care, The California Strawberry Commission, Orafti, Science Advisory Council dairy foods and Agriculture; Canadian Agriculture Police Institute, Soy Advisory Board of Dean Foods, Kellogg’s, Quaker Oats, Procter and Gamble Technical Centre Limited, The Coca-Cola Sugar Advisory Board, Griffin Hospital for the development of the NaVo System, Abbott Laboratories, The Canola and Flax Councils of Canada, Soy Advisory Board of Dean Foods, The California Strawberry Commission, The International Tree Nut Council Nutrition Research & Education, The Peanut Institute, Barilla, Unilever, Haine Celestial, Loblaw Supermarkets; Stock/stock options: Pacific Health Laboratories; Other: Spouse (Dr. Alexandra L. Jenkins) is a Director and Partner with Glycemic Index Laboratories, which tests foods for glycemic index used in his studies.
Dr Tim Noakes & Dr Gary Fettke

- Diabetes is now the biggest killer of SA women and the 2nd biggest killer overall, while 7 years ago it was not even in the Top 10. [https://www.dailymaverick.co.za/article/2017-03-12-health-e-news-diabetes-moves-up-the-killer-charts/#.WMXjZxJ95E4](https://www.dailymaverick.co.za/article/2017-03-12-health-e-news-diabetes-moves-up-the-killer-charts/#.WMXjZxJ95E4)

- Dr Tim Noakes found not guilty after 3 years

- Dr Gary Fettke in Australia has been banned from giving nutritional advice to his patients or the public for the rest of his medical career, by the Australian Health Practitioner Regulation Agency. [https://drmalcolmkendrick.org/2017/04/26/tim-noakes-found-not-guilty-of-something-or-other/](https://drmalcolmkendrick.org/2017/04/26/tim-noakes-found-not-guilty-of-something-or-other/)
What other stuff?
Nootropics / Smart Drugs

• Omega 3, Choline, B-complex, Nicotine (basic stuff)
• Fats (saturated & delicious)
• Piracetam (the first true smart drug)
• Aniracetam, Oxiracetam, Phenylpiracetam (*goal)
• Modafinil / Adrafinil (ADHD, gamers, Wall Street)
• Micro-dosing (lithium, LSD, mushroom – Silicon Valley)
• The God Pill (Qualia, Limitless The Movie)
Genetic Testing – what can & can’t you find out?

- Genes: we’ve got a bunch of ‘em but some are wrong
- Solo: BRCA, so up to 85% chance of breast cancer
- Panels: not prostate cancer, but zinc methylation
- MTHFR: where folic acid is poison, with health issues
- Drugs: some simply cannot be processed
- Exercise & diet: What’s right for you
Artificial Intelligence vs Doctors

• What if the diagnosis were better? And earlier?
• AI is already proving itself superior in certain areas
  – http://www.newyorker.com/magazine/2017/04/03/ai-versus-md
• And this is only the beginning
Curing Death – what?

• SENS Research Foundation
• Seven types of aging damage, including
  – cell loss & atrophy
  – mitochondria
  – telomeres

https://en.wikipedia.org/wiki/Aubrey_de_Grey
Curing Death – DIY how?

• **Genetics**: cancer not just random, predisposition, etc.
• **Detox**: hair analysis, glutathione, chlorella, thistle
• **Insulin**: #LCHF, Metformin, fasting, HIIT
• **Inflammation**: LCHF*, thermogenesis,
  – [https://techcrunch.com/2017/05/03/scientists-have-eliminated-hiv-in-mice-using-crispr/](https://techcrunch.com/2017/05/03/scientists-have-eliminated-hiv-in-mice-using-crispr/)
• **Parasympathetic**: mindfulness, cold showers, HRV, breathing
• **Mitochondria**: infrared, HIIT, oxaloacetate, PQQ, fasting, cold
• **Telomeres**: de-stress, exercise, supplements
  – [https://draxe.com/telomeres/](https://draxe.com/telomeres/)
• **Supplement**: all of the above
Curing Death – medically (not DIY)?

- **Detox**: chelation  
- **Gene therapy**: CRISPR & HIV  
  - [https://techcrunch.com/2017/05/03/scientists-have-eliminated-hiv-in-mice-using-crispr/](https://techcrunch.com/2017/05/03/scientists-have-eliminated-hiv-in-mice-using-crispr/)
- **Stem cell therapy**: joints, pancreas, infarctions  
- **Platelet-rich Plasma**: joints, ligaments, tendons  

And if all else fails …

- **Cryonics**: freeze yourself for decades or even centuries  
  - [http://www.alcor.org/AboutCryonics/index.html](http://www.alcor.org/AboutCryonics/index.html)
- **Cyber-survival**: download your brain  
Wrapping it all up
Last Thoughts

- I am not a doctor; I am not giving you advice; I am not diagnosing you; There are of course exceptions to every rule; Don’t try this at home kids

- I cannot keep up with all being published on the topic!

- Many Billionaires are putting a lot of money into this

- As individuals we can make our own lives better, and as members of the Actuarial community we can positively impact on the lives of our policyholders
Additional Reading
- intensivedietarymanagement.com
- chrismasterjohnphd.com
- quantifiedself.com
- thefatemperor.com
- selfhacked.com
- 23andme.com
- ubiome.com
- smartdrugsmarts.com
- BiohackingAsia.wordpress.com
- examine.com
- bulletproofexec.com
- bengreenfieldfitness.com
- fourhourbody.com
- drhyman.com
- terrywahls.com
- realmealrevolution.com
- eatingacademy.com
Let’s Stay in Touch

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