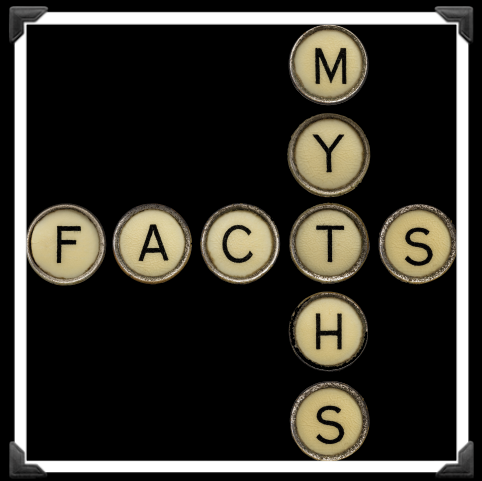
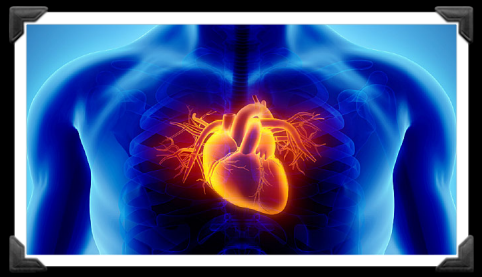
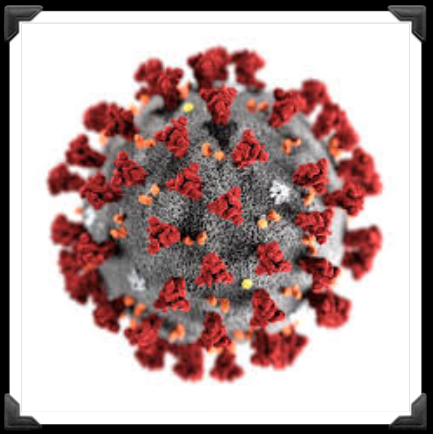
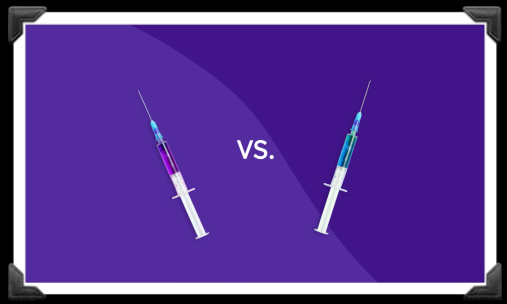




How well do treatments prevent COVID shingles heart disease diabetes or anything else that might ail you?

James McCormack
BSc (Pharm), PharmD
Professor
University of British Columbia
Vancouver, BC, Canada





Objectives

To explain my philosophy on treatments

To be skeptical when it comes to medical information

To realise you need to know the “numbers” - at least a ballpark idea

To have you understand the benefit of preventative treatments such as the COVID vaccine, the shingles vaccine, blood pressure/glucose/cholesterol treatments


SNAKE
OIL

My Specific Philosophy on Medications

(anything that is not food, surgery, talk or physical manipulation)

- Some medications are incredibly useful
- Most medications don’t work nearly as well as you think
- Most new medications are no better than what we already have
- Most of the starting doses in the medication books are TOO HIGH

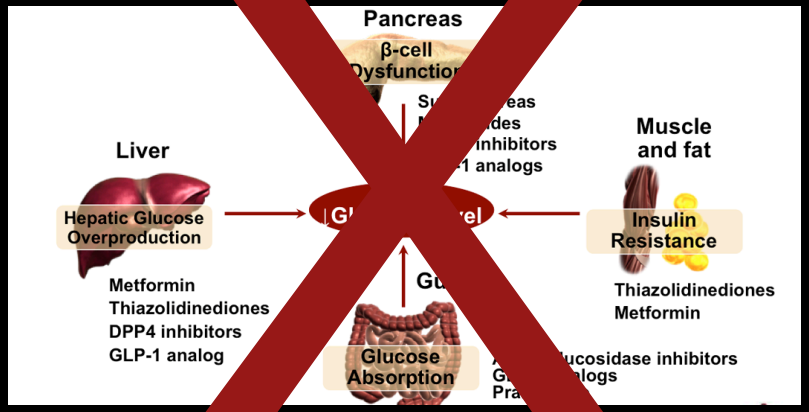
My Simple Philosophy on Treatments

These sorts of terms are uniformly uninformative - allopathic, conventional, mainstream, Western medicine, complementary, alternative, integrative, naturopathy, Chinese medicine, homeopathy, herbal

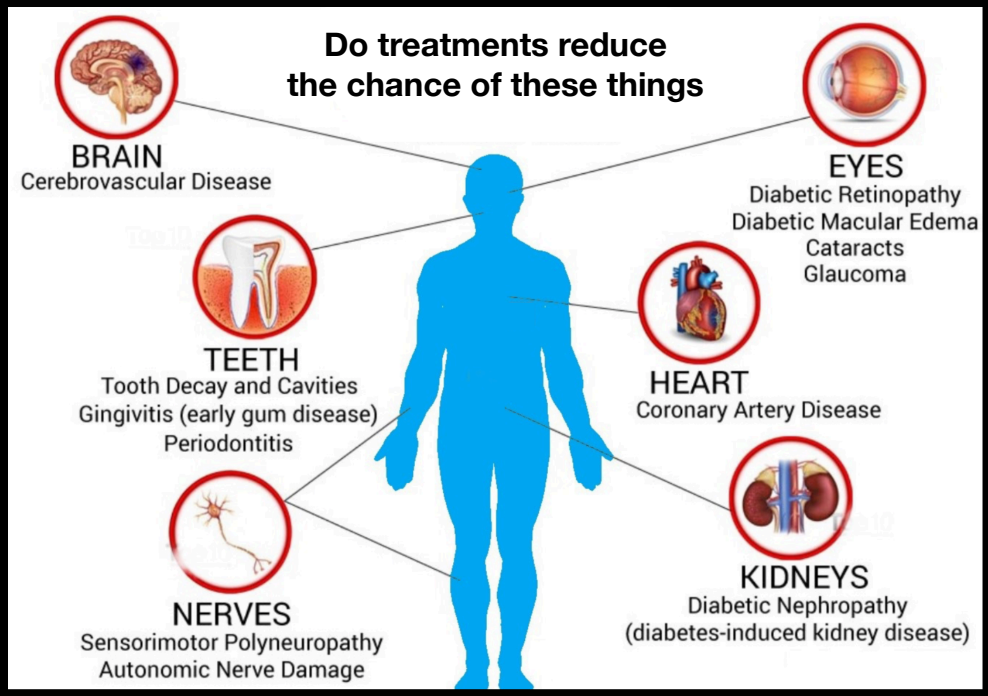
We all treat people with “things” - oral/injections/topical, nutrition, surgery, talk, physical manipulations etc

I don’t care HOW treatments work, I care IF treatments work

How Does It Work?



Nice to Know



Absolutely !@#$% Crucial to Know

My Simple Philosophy on Treatments

IMHO there are only 2 classes of treatments - those that have been shown to work (or not work) and those that haven’t been properly studied

Ever wonder
if the
recommendations
from these shows
are evidence-based?

WE DID

Televised medical talk shows—what they recommend and the evidence to support their recommendations: a prospective observational study

thebmj 2014

Christina Korownyk *associate professor of family medicine*[1], Michael R Kolber *associate professor of family medicine*[1], James McCormack *professor of pharmacy*[3], Vanessa Lam *research assistant*[2], Kate Overbo *research assistant*[2], Candra Cotton *pharmacist*[1], Caitlin Finley *research assistant*[1], Ricky D Turgeon *pharmacist*[3], Scott Garrison *associate professor of family medicine*[1], Adrienne J Lindblad *associate clinical professor of family medicine*[1], Hoan Linh Banh *associate professor of family medicine*[1], Denise Campbell-Scherer *associate professor of family medicine*[1], Ben Vandermeer *biostatistician*[4], G Michael Allan *professor of family medicine*[1]

Brit Med J 2014;349:g7346 doi: 10.1136/bmj.g7346 (Published 17 December 2014)

“Believable” Evidence for Recommendations

	EVIDENCE			
	Supports	Contradicted	Not Found	Believable or somewhat believable
Dr Oz	46%	15%	39%	33%
The Doctors	63%	14%	24%	53%

Sli.do ID is **HCMAY20**

BMJ 2014;349:g7346


World Health Organization
300+
medications
40
Years of the Model List of Essential Medicines
1977 - 2017

Most new things aren’t much or any better

Golden Pill Award

PRESCRIRE AWARDS

	Major advance (1)	Clear advance (7)	Modest improvement (13)
2011	0	0	0
2012	0	0	2 abiraterone (prostate CA), boceprevir (Hep C)
2013	0	0	1 meningococcal conjugate vaccine (infant immunization)
2014	1 cholic acid (hereditary bile acid deficiency)	3 imatinib (ALL), artesunate (malaria), sofosbuvir (HepC)	1 sodium phenylbutyrate coated granules (urea cycle disorders)
2015	0	1 propranolol (severe infantile hemangioma)	2 permethrin (scabies), ketoconazole HRA (endogenous Cushing's syndrome)
2016	0	0	2 nivolumab (inoperable melanoma), trametinib (inoperable melanoma)
2017	0	1 asfotase alfa (perinatal and infantile forms of hypophosphatasia)	2 pertuzumab (metastatic breast cancer), emtricitabine/tenofovir (HIV transmission)
2018	0	2 sebelipase alfa (lysosomal acid lipase deficiency), naloxone nasal spray (emergency treatment of opioid overdose)	3 lidocaine + prilocaine combination (primary premature ejaculation), naloxone IM kit (emergency treatment of opioid overdose), arsenic trioxide (acute promyelocytic leukaemia)
2019	0	3 emicizumab (prophylaxis of bleeding episodes in patients with haemophilia A and "factor VIII inhibitors"), tisagenlecleucel (B-cell acute lymphoblastic leukaemia), axicabtagene ciloleucel (large B-cell lymphomas)	3 ruxolitinib (symptomatic myelofibrosis), trastuzumab emtansine (HER2-positive inoperable breast cancer), pembrolizumab (metastatic non-small cell lung cancer)

elevated blood pressure
elevated cholesterol
elevated glucose (type 2 diabetes)

for almost all people
these are risk factors
NOT diseases

Risk Factors versus Clinical Endpoints

"a risk factor/marker is a variable associated with an increased risk of disease"

Surrogate Markers -Not As Important	Outcomes you can feel - Very Important
blood pressure	symptoms
cholesterol	heart attacks
glucose/diabetes	strokes
bone density	heart failure
heart rate	death
CRP	dialysis
proteinuria	amputation
FEV1	fractures
	blindness
	revascularization
	angina
	TIAs

Surrogates

The Never-ending Consistently Inconsistent Story

LIPIDS

HDL - torcetrapib ⬆HDL and ⬇ LDL ➡ CVD and mortality⬆

LDL - niacin and ezetimibe ⬇ LDL ➡ no change in outcomes

Trigs - fibrates ⬇ trigs ➡ no change in outcomes

BLOOD PRESSURE

Atenolol, aliskiren, doxazosin ⬇ BP ➡ no change in outcomes

GLUCOSE (A1c)

Most medications that ⬇ glucose ➡ no change or ⬆ outcomes

ANTIOXIDANTS/HOMOCYSTEINE

Vitamin A, E, B_6, folate ➡ no change or ⬆ outcomes

It’s all about the numbers

Radio, TV, and Newspaper Reports

"Aspirin produces a 30% reduction in heart attacks"

"Treating high blood pressure reduces the chance of strokes by 40%"

"Cholesterol lowering drug decreases chance of heart attacks by 35%"

"Vasectomies increase chance of prostate cancer by 40%"

Imagine that you just found out you have a risk factor for cardiovascular disease (e.g., high blood pressure or high cholesterol).

A drug that will treat this risk factor is available and it has no side effects and its cost is covered by a plan.

Consider the following three scenarios.

Would you be willing to take this drug every day for the next five years if it had been shown in a clinical trial that:

1) patients treated with this cholesterol pill had been shown to have 33% fewer heart attacks than the non-treated patients; or if

2) it was found that 2% of the patients who took this cholesterol pill had a heart attack, compared to 3% who did not take this pill - a difference of 1%; or if

3) in 100 patients who took this cholesterol pill for five years the medicine would prevent one of the 100 from having a heart attack. There is no way of knowing in advance which person that might be?

Be Wary of the “Relatives”

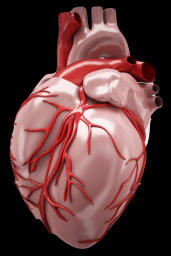
Anyone who says that “an event” was reduced by a number greater than 10% is almost always talking about a relative reduction

Numbers greater than 10% are misleading unless they are put into the proper context

Winning the Fight Against Silent Killers:
High Blood Pressure and Diabetes

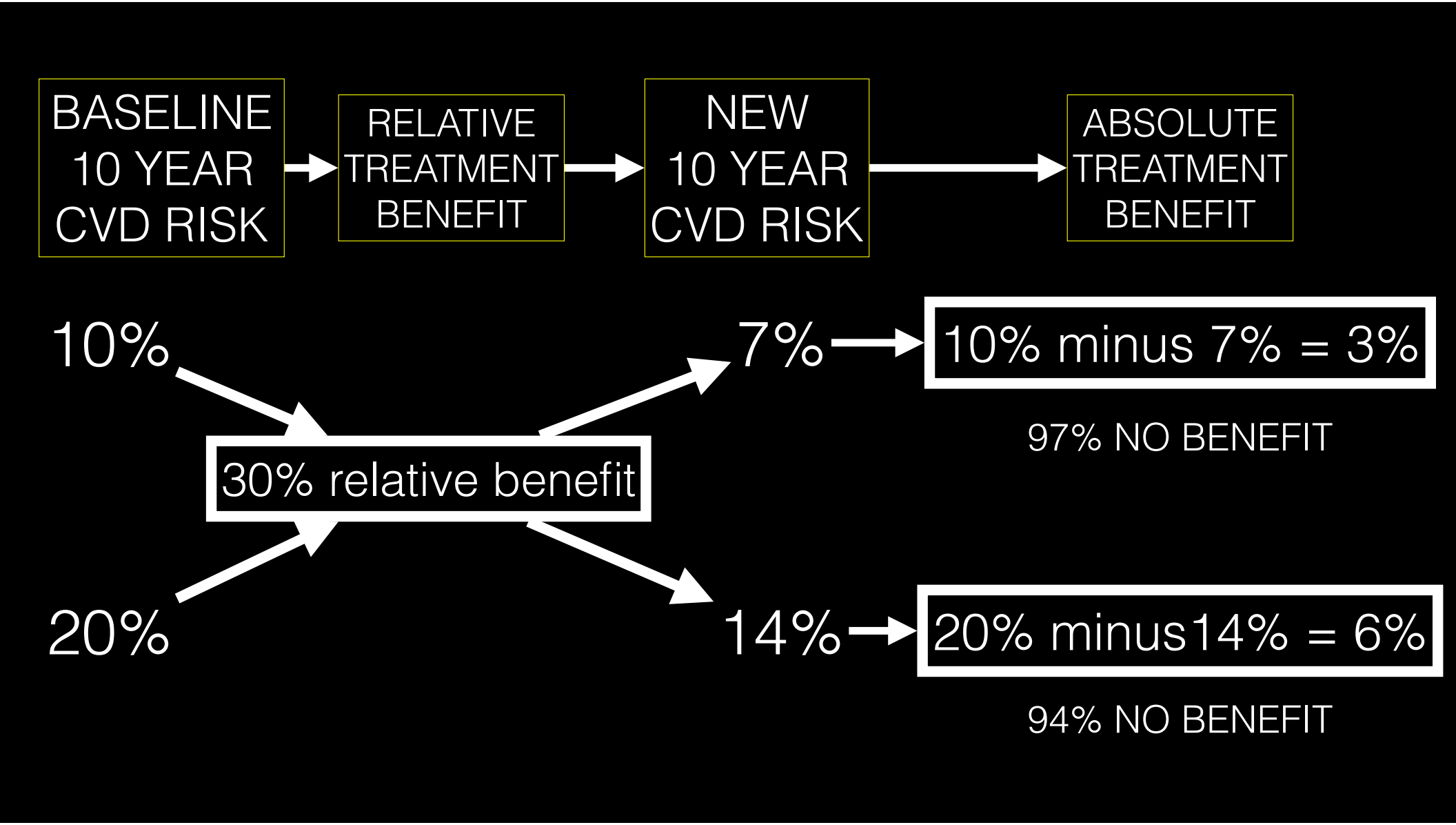
Cholesterol – The Silent Killer
Become a supporter member and help us prevent premature and avoidable deaths

HEART UK
THE CHOLESTEROL CHARITY



25% OFF = 2% OFF

8% risk of a heart attack - get rid of 25% of the 8%
8% goes down to 6% = a difference of 2%
2% = 2/100 or 1/50


BASELINE 10 YEAR CVD RISK
RELATIVE TREATMENT BENEFIT
NEW 10 YEAR CVD RISK
ABSOLUTE TREATMENT BENEFIT
10%
7%
10% minus 7% = 3%
97% NO BENEFIT
30% relative benefit
20%
14%
20% minus14% = 6%
94% NO BENEFIT

What you need to ask your health care provider

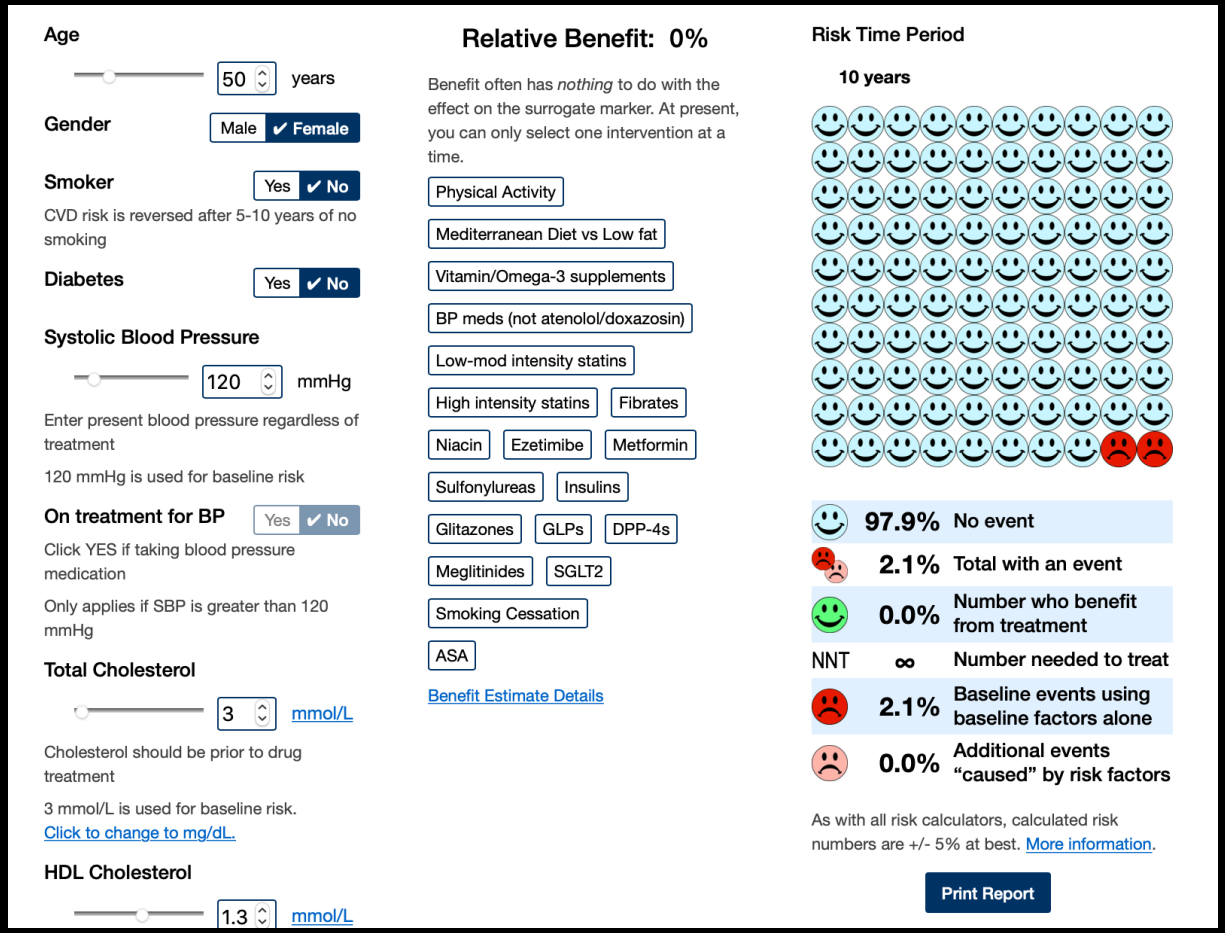
NOT - how is my blood pressure/cholesterol/glucose/bone density

What is my risk of getting outcomes such as

- heart attacks
- strokes
- kidney problems
- fractures

Don't want to hear "low risk" or "high risk" but rather a ballpark idea of your risk with numbers

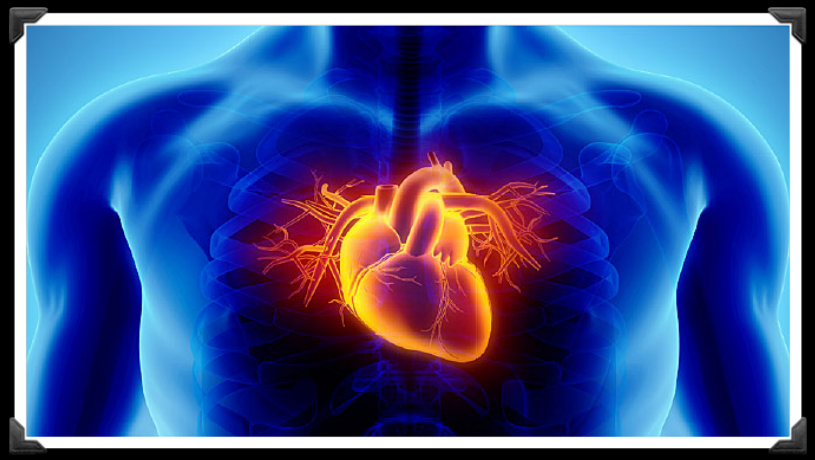
EG: Roughly a 10% chance of having a heart attack or stroke in the next 10 years



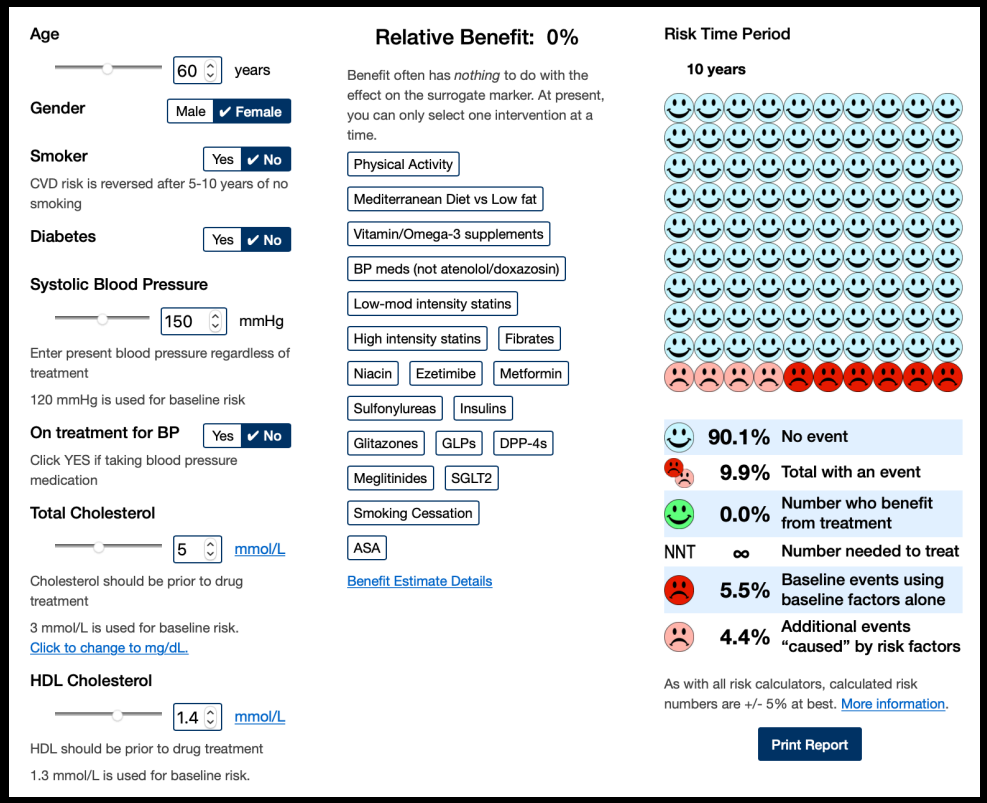
cvcdcalculator.com

Cardiovascular disease

(blood pressure, cholesterol, diabetes

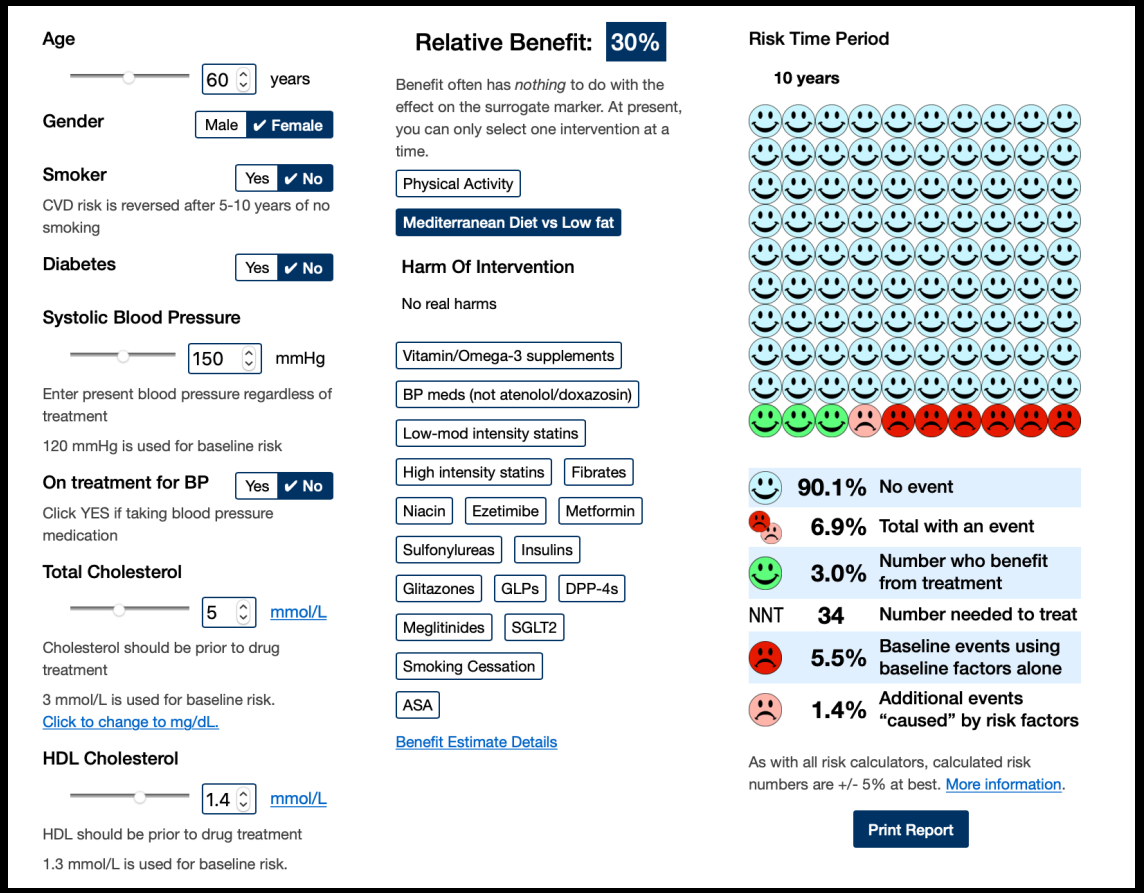


10 -year baseline risk of cardiovascular disease if you are a 60 y/o female with a systolic blood pressure of 150 mmHg, non-smoker, total cholesterol of 5 and HDL 1.4



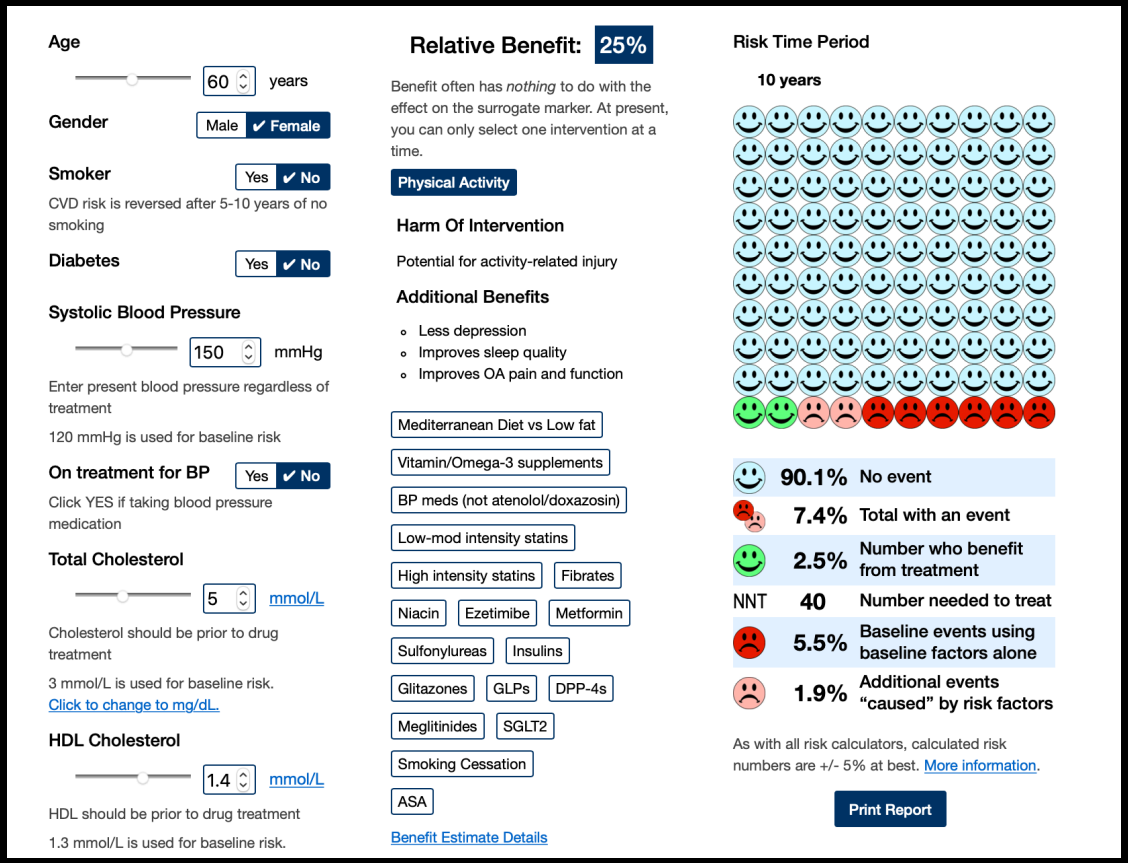
Your baseline risk of a heart attack or stroke is 10% over the next 10 years

If you eat the Mediterranean diet for 10 years



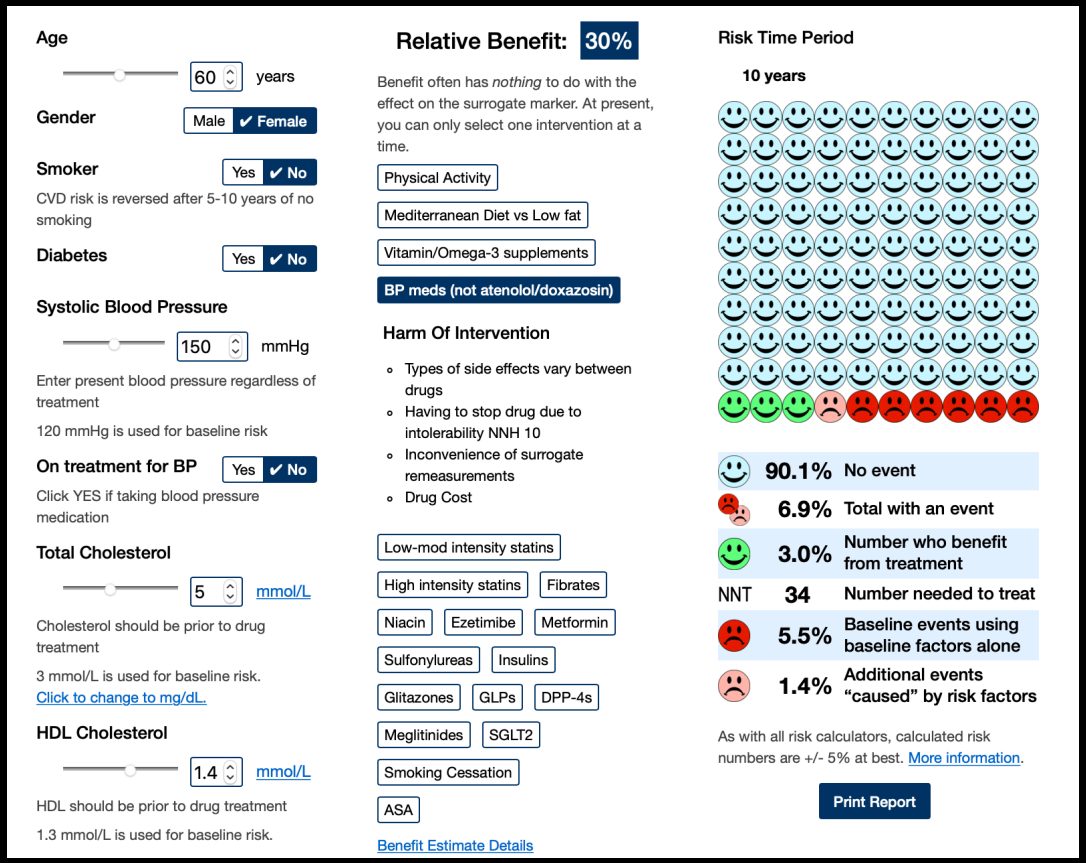
Risk goes from 10% down to 7%

If you are physical active over 10 years



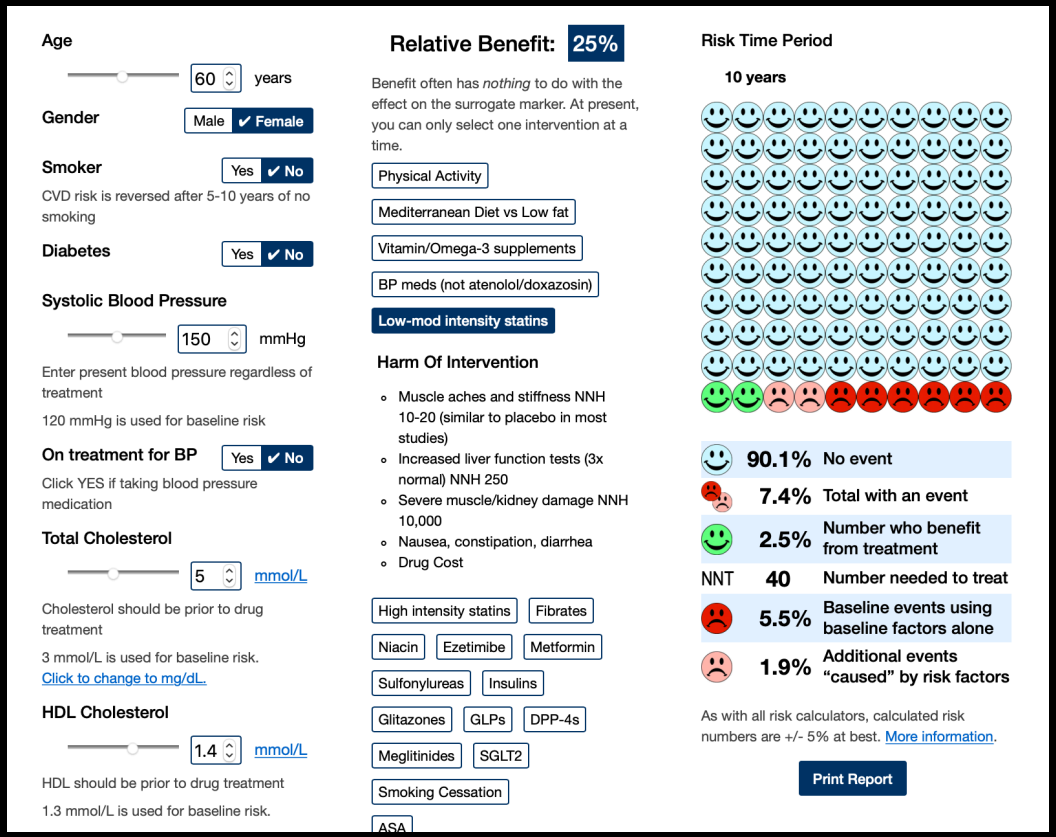
Risk goes from 10% down to 8%

If you treat the blood pressure for 10 years



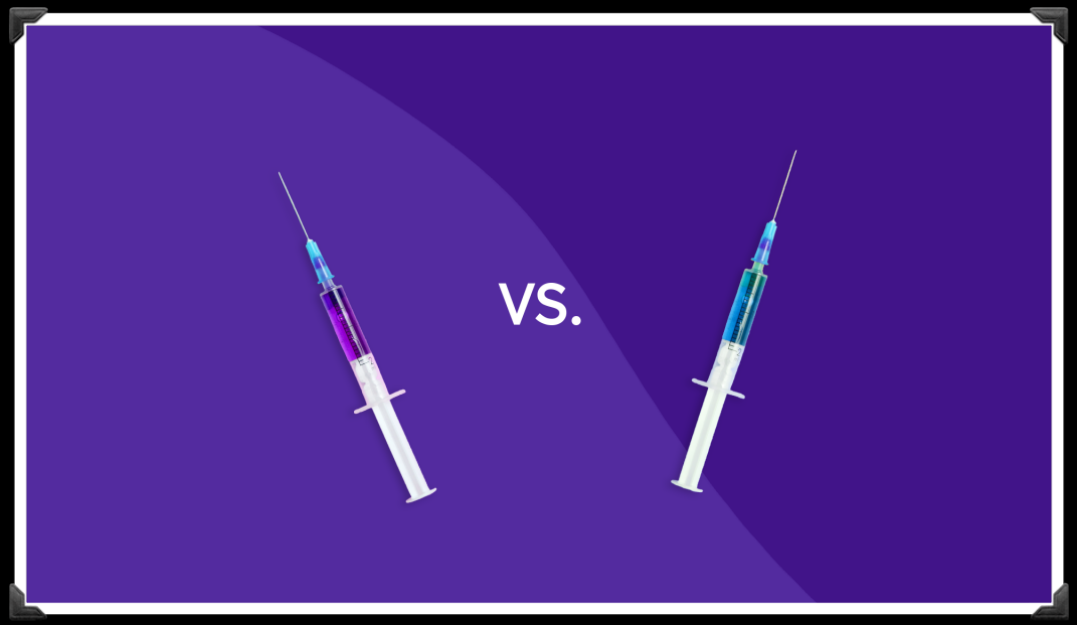
Risk goes from 10% down to 7%

If you take a statin for 10 years



Risk goes from 10% down to 8%

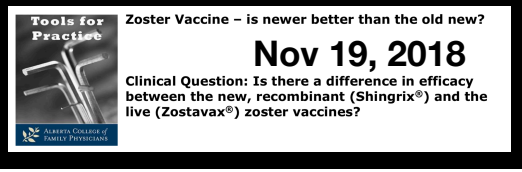
Shingles



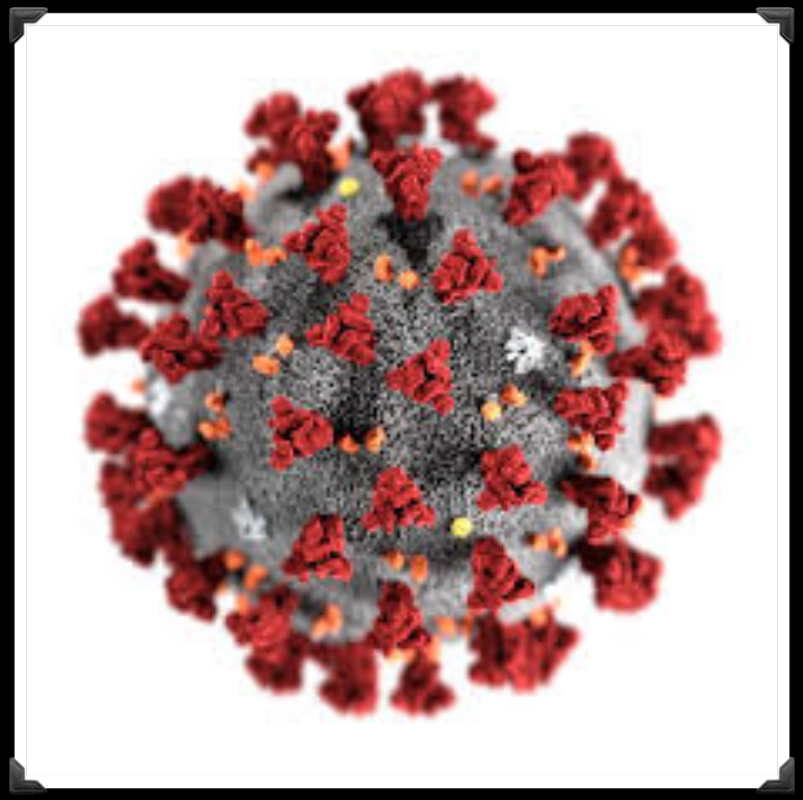
The Two Zoster Vaccines

ALL NUMBERS ADJUSTED TO 3 YEARS	Herpes zoster (shingles)		Relative benefit	Postherpetic neuralgia (pain after rash goes away)	
	Adults >50	Adults >70			Dose/cost
Placebo	2%	3.4%	~50-70%	~0.4%	1 dose $180
Zostavax live vaccine	0.6%	1.7%		~0.2%	
Placebo	2.7%	3.5%	~90-95%	0.3%	2 doses $250
NEW Shingrix recombinant vaccine	0.1%	0.4%		0.1%	

BUT NO HEAD TO HEAD STUDIES



COVID-19



COVID-19 Vaccine - from news releases NOT actual publications

3-4 months	Pfizer Vaccine 44,000 people (Nov 18)	Moderna Vaccine 30,000 people (Nov 16)
Placebo	162 cases/22,000 = 0.7% or 1/142	90 cases/15,000 = 0.6% or 1/167
Vaccine	8 cases/22,000 = 0.04% or 1/2,500	5 cases/15,000 = 0.03% or 1/3,000
Relative benefit	0.04% is 95% less than 0.7% = 95% benefit	0.03% is 95% less than 0.6% = 95% benefit
Absolute benefit	0.7% minus 0.04% = 0.66% benefit	0.6% minus 0.03% = 0.57% benefit
SERIOUS CASES	10 placebo and 1 vaccine	11 placebo and 0 vaccine

It’s all about figuring out

The Chance of “X”

WITH NO

TREATMENT/TEST

The Chance “X”

WITH

TREATMENT/TEST


think
for
yourself

What I hoped I achieved

Sceptic

HOPE

Cynic

DOUBT