

# DIVING FOR

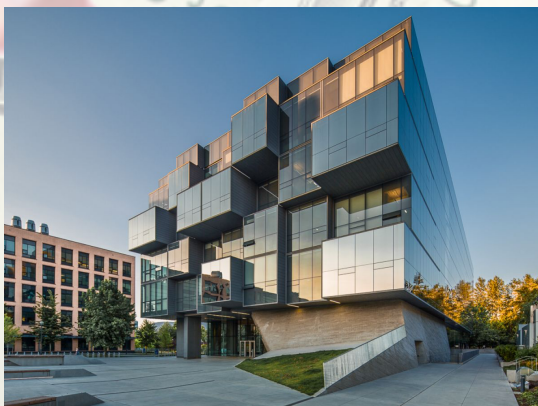
James McCormack  
BSc (Pharm), PharmD  
Professor  
Faculty of Pharmaceutical Sciences  
University of British Columbia  
Vancouver, BC, Canada

# MEDICAL PEARLS

[therapeuticseducation.org](http://therapeuticseducation.org)  
[medicationmythbusters.com](http://medicationmythbusters.com)

TO GET A HANDOUT GO HERE  
<http://therapeuticseducation.org/handouts>





- ☑ Entire salary comes through the UBC Faculty of Pharmaceutical Sciences - also some legal/educational work

- ☑ I have received no honorarium or research money from the drug industry in the last 25 or so years



- ☑ Premium podcast subscription Best Science (BS) Medicine podcast - [therapeuticseducation.org](http://therapeuticseducation.org)



~10 years  
~400 episodes  
Up to 24/7 days of content



ME  
(a few years ago)



**BS without the BS**



Mike Allan

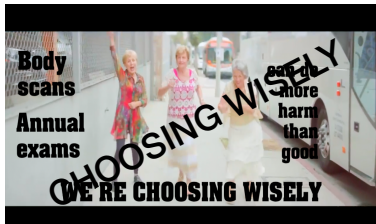


# "I've Gotta Get a Message to You" Bee Gees

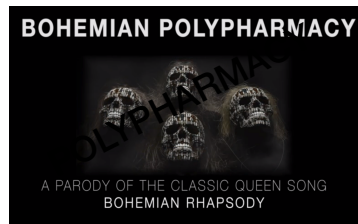
~ 800,000 views



[www.youtube.com/user/jmccorma1234](http://www.youtube.com/user/jmccorma1234)



Parody of  
**Happy**



Parody of  
**Bohemian Rhapsody**



Parody of  
**Somebody That I Used to Know**



Parody of  
**Day Tripper**



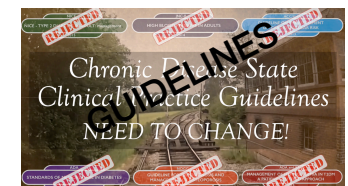
Parody of  
**Take it Easy**



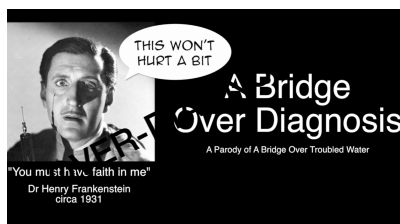
Parody of  
**Viva La Vida**



Parody of  
**Hotel California**



Parody of  
**End of the Line**



Parody of  
**Bridge Over Troubled Water**



Parody of  
**Don't Fear the Reaper**



Parody of  
**Treat You Better**



Parody of  
**Money for Nothing**



# What Will You Do?

You are approximately 45 y/o

You have been diagnosed “properly” with elevated blood pressure

You have tried non-drug measures for 6 months and still your blood pressure remains elevated

## QUESTION

ABOVE What Blood Pressure Would YOU Take A Drug Every Day For The Next 5 Years?

What drug and dose would you start with?



# What Will You Do?

You are approximately how old you are

You have been diagnosed “properly” with community acquired pneumonia

## QUESTION

What drug, dose and duration would you take?



# Guidelines would be awesome if they...

Were developed primarily by, and definitely for, the people that ultimately end up using them

Were a credible synopsis of the best available evidence presented in a way that clinicians could easily access and interpret

Allowed patient values and preferences to be taken into account

## Wrong guidelines: why and how often they occur

**Primiano Iannone,<sup>1</sup> Nicola Montano,<sup>2</sup> Monica Minardi,<sup>3</sup>  
James Doyle,<sup>3</sup> Paolo Cavagnaro,<sup>4</sup> Antonino Cartabellotta<sup>5</sup>**

“Unfortunately, depending on how their reliability is measured, up to 50% of guidelines can be considered untrustworthy. This carries serious consequences for patients’ safety, resource use and health economics burden.”

EBM 2017;22:1-3



## Simplified lipid guidelines

*Prevention and management of cardiovascular disease in primary care*

G. Michael Allan MD CCFP Adrienne J. Lindblad ACPR PharmD Ann Comeau MN NP CCN(C) John Coppola MD CCFP  
Brienne Hudson MD CCFP Marco Mannarino MD CCFP Cindy McMinis Raj Padwal MD MSc  
Christine Schelstraete Kelly Zarnke MD MSc FRCPC Scott Garrison MD PhD CCFP Candra Cotton  
Christina Korownyk MD CCFP James McCormack PharmD Sharon Nickel Michael R. Kolber MD CCFP MSc

Can Fam Phy 2015;61:857-67

### CLINICAL PRACTICE GUIDELINES

## Simplified guideline for prescribing medical cannabinoids in primary care

G. Michael Allan MD CCFP Jamil Ramji Danielle Perry Joey Ton PharmD Nathan P. Beahm PharmD  
Nicole Crisp RN MN NP-Adult Beverly Dockrill RN Ruth E. Dubin MD PhD FCFP DCAPM Ted Findlay DO CCFP FCFP  
Jessica Kirkwood MD CCFP Michael Fleming MD CCFP FCFP Ken Makus MD FRCPC Xiaofu Zhu MD FRCPC  
Christina Korownyk MD CCFP Michael R. Kolber MD CCFP MSc James McCormack PharmD Sharon Nickel  
Guillermina Noël MDes PhD Adrienne J. Lindblad ACPR PharmD

Can Fam Phy 2018;64:111-120

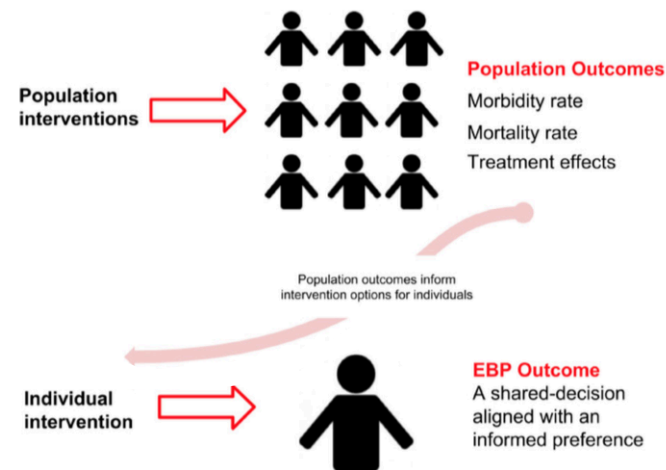


OPEN ACCESS

## Shared decision is the only outcome that matters when it comes to evaluating evidence-based practice

James McCormack,<sup>1</sup> Glyn Elwyn<sup>2</sup>

“in the vast majority of circumstances, the only outcome of relevance for EBP is to measure whether a shared decision was made”



doi:10.1136/ bmjebm-2018-110922



BMJ June 2012



OVERDIAGNOSIS  
Harming the healthy

# MEDICATIONS

**They can only really do 5 things - and only 2 of these are good**

Help with symptoms

Reduce risk of future health issues

Cause side effects

Cost money

Be inconvenient



**“The answers are all out there, we just need to ask the right questions.”**

*Oscar Wilde*



# Have A Purpose

You are looking for numbers (%s)



In general who is it for - young/older, primary/secondary

TIME FRAME - 1 dose, 1 day, 1 week, 1 month, 1 year, 1 decade?

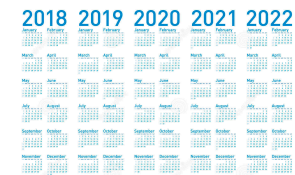
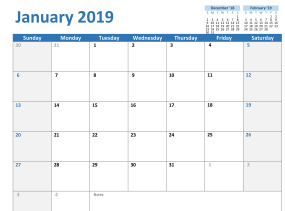
Is it for symptoms?

Clinically relevant endpoints

Is it for prevention?

CVD, fractures, exacerbations, infections

- anything as long as it isn't a surrogate marker (BP, cholesterol, glucose, FEV1, bone density)



# Here is how I look if time is limited

(which it almost always is)



Google

ertugliflozin meta-analysis



Trusted evidence.  
Informed decisions.  
Better health.

English

Cochrane.org

Sign In

Title Abstract Keyword



Browse

Advanced search

Cochrane Reviews

Trials

Clinical Answers

About

Help

If no meta-analysis/systematic review - suggests not a lot of published studies

## **Progress in evidence-based medicine: a quarter century on**

*Benjamin Djulbegovic, Gordon H Guyatt*

“Few clinicians would ever have the skill - or time - to conduct sophisticated assessment of the evidentiary basis for their practice”

Now - “directing clinicians to processed sources of evidence, and aiding decision making by advancing the science of trustworthy clinical practice guidelines that would be available to clinicians at the point of care delivery”

Lancet 2017;390:415–23

# Key steps to communicating evidence

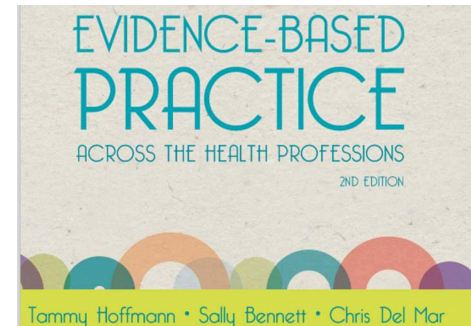
Understand the patient's (and family members') experiences and expectations.

Build partnerships.

Discuss the evidence, including a balanced discussion about uncertainties.

Present recommendations.

Check for understanding and agreement.





# Risky Relative Adjectives

HOW

low is low

moderate is moderate

high is high



# Evidence-based risk communication

“There is likely no single best method of communicating probabilities to patients but rather several good options with some better suited to certain risk scenarios.”

Ann Intern Med 2014;161:270-80

# Recommended approaches

Need a time frame, main endpoints, ask what they know

GENERAL SUGGESTIONS - these are “relative”

use percentages (5%) or natural frequencies (5 out of 100) - BOTH?

use absolute terms

add bar graphs or icon arrays

use incremental risk format with icon arrays in the same array

- **avoid use of NNTs**

if use relative risks add baseline risks

# It's all about figuring out

The Chance of “X”  
WITH NO  
TREATMENT/TEST  
The Chance “X”  
WITH  
TREATMENT/TEST



# Tools For Practice

## TOOLS FOR PRACTICE

Total articles found: 233

### #233 Drink Up: Increasing Fluid Intake to Prevent Recurrent UTIs

**Author(s):** Adrienne J Lindblad, Rodger Craig

**Publication Date:** April 15, 2019

**Collection:** Tools for Practice

**Categories:** General, Obstetrics-Gynecology, Urology

**Clinical Question:** Does increasing water intake prevent recurrent urinary tract infections (UTIs)?

*Tags: water, water intake, low fluid, UTI, urinary track, infection, women, female, antibiotics, non-pregnant, premenopausal, cystitis, cranberry juice, vaginal estrogen, oral estrogens, antibiotic prophylaxis, .*

 [View Article](#)



**Begin Reflective Exercise**

(to launch a reflective exercise, you must be logged into GoMainpro)

### #232 Muscling out molluscum contagiosum: Which treatments work?

**Author(s):** Danielle Perry, G. Michael Allan, Nicolas Dugré

**Publication Date:** April 01, 2019

**Collection:** Tools for Practice

**Categories:** Dermatology, General, Infectious Disease

**Clinical Question:** How effective are commonly used therapies for molluscum contagiosum?

*Tags: molluscum contagiosum, lesion, potassium hydroxide, cryotherapy, curettage, cantharidin, imiquimod, virus, immune system, infection, pediatric, immunocompetent, burn, self-limiting*

 [View Article](#)



**Begin Reflective Exercise**

(to launch a reflective exercise, you must be logged into GoMainpro)

### #231 Does an ASA a day really keep the doctor away?

**Author(s):** Paul Fritsch, Michael R Kolber

**Publication Date:** March 18, 2019

**Collection:** Tools for Practice

**Categories:** Cardiology, Gastroenterology, General, Oncology

**Clinical Question:** Is ASA effective for reducing cardiovascular events in patients without pre-existing cardiovascular disease?

*Tags: ASA, cardiovascular, cardiovascular disease, elderly, diabetic, gastrointestinal, cancer, colon, CVD, transfusion, hemodynamic, circulatory system, primary prevention, aspirin, bleeding, bleeds*

 [View Article](#)

# <https://www.bmj.com/rapid-recommendations>

## Dual vs single antiplatelet therapy



The BMJ Practice: [Dual antiplatelet therapy with aspirin and clopidogrel for acute high risk transient ischaemic attack and minor ischaemic stroke](#)

BMJ Research: [Clopidogrel plus aspirin versus aspirin alone for acute minor ischaemic stroke or high risk transient ischaemic attack](#)

## Oxygen therapy for acutely ill medical patients



The BMJ Practice: [Oxygen therapy for acutely ill medical patients: a clinical practice guideline](#)

The Lancet research: [Mortality and morbidity in acutely ill adults treated with liberal versus conservative oxygen therapy \(IOTA\): a systematic review and meta-analysis](#)

MAGICapp: [Expanded version of the results](#)

## Prostate cancer screening



The BMJ Practice: [Prostate cancer screening with prostate-specific antigen \(PSA\) test: a clinical practice guideline](#)

The BMJ research: [Prostate cancer screening with prostate-specific antigen \(PSA\) test: a systematic review and meta-analysis.](#)

BMJ Open research: [Values and preferences of men for undergoing prostate-specific antigen screening for prostate cancer: a systematic review](#)

The BMJ editorial: [What should doctors say to men asking for a PSA test?](#)



# Comparing Treatment Options for Pain: The C-TOP Tool

## Neuropathic Pain

Osteoarthritis Pain  
Coming Soon

Back Pain  
Coming Soon

### Medication Options

**Amitriptyline**  
(Elavil®)

**Cannabinoids**  
(Nabiximols, nabilone, medical marijuana)

**Duloxetine**  
(Cymbalta®)

**Gabapentin**  
(Neurontin®)

**High-Dose Opioids**  
(morphine, oxycodone)

**Pregabalin**  
(Lyrica®)

**All Treatments**  
(comparison)

Curious about capsaicin, botox, tramadol, carbamazepine, or venlafaxine for neuropathic pain?  
[Click here to learn more.](#)

### Meaningful Pain Relief from Amitriptyline

(30% reduction in pain scores)



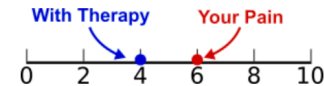
<b>Amitriptyline Benefit</b>	<b>Placebo Benefit</b>	<b>No Benefit</b>
<b>25%</b>	<b>25%</b>	<b>50%</b>

(ranges 13% to 45%)

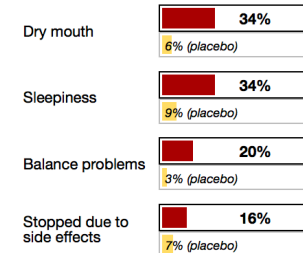
A typical placebo group response seen in pain studies is 25% but this can be adjusted in the [FAQ](#) section.

### Meaningful Pain Relief

An example of a 30% reduction in pain scores is a decrease from 6 to 4 on a 10 point pain scale



### Amitriptyline Harms



### Other Considerations

- Typically taken at bedtime due to sleepiness effects
- Approximate cost (CAD) for 30-day supply (without dispensing fee): **\$1.50 to \$3.50**

<http://pain-calculator.com>

**mystudies.org ~300 studies**



## Load studies



## Study Results at Your Fingertips

You want to use evidence in your clinical practice from the landmark studies – those studies that change practice. Your patient comes in and asks you about the latest greatest study. How can you quickly and easily get all that information? **Let MyStudies help.**

You are at a presentation and you start to wonder if the presenter is really telling you everything you need to know about a study. Did they just present relative numbers? Did they only present the benefits with no mention of harms? Did they come up with conclusions that don't really match the results? **MyStudies can help.**

MyStudies

Filter Tags

#add-non-ptc-values-later

#AEEntered

#checked

#checkedAE

#checkedJS

#dowenanthhis

#Jordanentered

#not-checked

#not-finished

#not-working

acarbose

ACE-inhibitor

ACS

acute-MI

aldosterone-antagonist

alegiazar

alendronate

alirocumab

alisiklen

aloglin

alteplase

amiodarone

amlodipine

amoxicillin

angiography

anti-platelets

antioxidants

antipsychotics

aorticvalve

apixaban

ARBs

arrhythmias

asa

aspirin

atenolol

atrial-fibrillation

beta-blocker

bloodpressure

bococizumab

budesonide

CABG

calcium

calcium-channel-blocker

Canakinumab

candesartan

captopril

cardiovascular

CETPinhibitors

chelation

chlorothalidone

cholesterol

clofibrate

clopidogrel

clopidogrelprasugrel

COPD

CRP

dabigatran

dalcetrapib

dalteparin

degludec

denosumab

diabetes

digoxin

dronedarone

dvt

elderly

Empagliflozin

enalapril

enoxaparin

ESRD

estrogen

evacetrapib

evolucumab

exercise

ezetimibe

fibrates

folicacid

formoterol

fractionalfloreserve

Gliblita

glargine

glaucoma

glitazones

HDL

heart-failure

heartfailure

heparin

homocysteine

hormone

HRT

hydralazine

hydrochlorothiazide

hypertension

ibandronate

indacaterol

insulin

intensive-BP-control

intensive-glucose-lowering

intensive-lifestyle-intervento

ipratropium

irbesartan

isoscotide-dinitrate

kidney-disease

lasex

lagratitude

LMWH

losartan

LRTI

Mediterranean

metformin

metoprolol

mometasone

multivitamin

nephroathy

neprilysin

niacin

nitrates

## ★ REDUCE-IT

**Cardiovascular Risk Reduction with Icosapent Ethyl for Hypertriglyceridemia.**

The New England journal of medicine, 2019

## ★ CABANA

**Effect of Catheter Ablation vs Antiarrhythmic Drug Therapy on Mortality, Stroke, Bleeding, and Cardiac Arrest Among Patients With Atrial Fibrillation**

JAMA, 2019

## ★ AUGUSTUS

**Antithrombotic Therapy after Acute Coronary Syndrome or PCI in Atrial Fibrillation.**

The New England journal of medicine, 2019

apixaban

asprin

warfarin

## ★ CREDENCE

**Canagliflozin and Renal Outcomes in Type 2 Diabetes and Nephropathy**

New England journal of medicine, 2019

## ★ VITAL Omega-3

**Marine n-3 Fatty Acids and Prevention of Cardiovascular Disease and Cancer.**

The New England journal of medicine, 2018

## ★ ODYSSEY OUTCOMES

**Alirocumab and Cardiovascular Outcomes after Acute Coronary Syndrome.**

The New England journal of medicine, 2018

#checked

alirocumab

PCSK9

## ★ VITAL Vitamin D

**Vitamin D Supplements and Prevention of Cancer and Cardiovascular Disease.**

The New England journal of medicine, 2018

## ★ ASCEND

**Effects of Aspirin for Primary Prevention in Persons with Diabetes Mellitus**

The New England journal of medicine, 2018

## ★ DECLARE-TIMI 58

**Dapagliflozin and Cardiovascular Outcomes in Type 2 Diabetes.**

The New England journal of medicine, 2018

# All the large RCTs evaluating the impact of glucose lowering medications on CVD Outcomes

RCTs evaluating the impact of medications on CVD outcomes in T2DM						
YEAR	NAME		MEDICATION	RESULT	OUTCOME CHANGED	ABSOLUTE DIFFERENCE/TIME
1970	UGDP	SU	tolbutamide (Orinase)	NEGATIVE	CVD mortality	↑8%/5 years
1971		BG	phenformin (DBI)	NEGATIVE	Mortality	↑6%/5-8 years
1976		SU	tolbutamide (Orinase)	NEGATIVE	Fatal MI	↑5%/5 years
1982		IN	insulin	NEUTRAL		
1998	UKPDS 33/34	IN,SU	insulin, chlorpropamide, glyburide/glibenclamide, glipizide	NEUTRAL		
1998		IN,SU,BG	metformin, insulin, chlorpropamide, glyburide/glibenclamide, glipizide	NEUTRAL except POSITIVE for metformin	Mortality MI	↓7%/11 years ↓6%/11 years
2003	STOP-NIDDM	OTH	acarbose (Precose)	POSITIVE	MI	↓1.5%/3 years
2005	PROACTIVE	GLIT	pioglitazone (Actos)	POSITIVE	MI	↓1.5%/3 years
2007	RECORD	GLIT	rosiglitazone (Avandia)	NEGATIVE	Heart failure	↑1%/4 years
2012	ORIGIN	IN	insulin	NEUTRAL		
2013	EXAMINE	DPP4	alogliptin (Nesina)	NEUTRAL		
2014	SAVOR-TIMI 53	DPP4	saxagliptin (Onglyza)	NEGATIVE	Heart failure	↑1%/2 years
2014	ALECARDIO	OTH	aleglitazar	NEUTRAL		
2015	ELIXA	GLP	lixisenatide (Adlyxin)	NEUTRAL		
2015	TECOS	DPP4	sitagliptin (Januvia)	NEUTRAL		
2015	EMPA-REG	GLIF	empagliflozin (Jardiance)	POSITIVE	Mortality Heart failure	↓2.5%/3 years ↓1.5%/3 years
2016	SUSTAIN 6	GLP	semaglutide (Ozempic)	POSITIVE	Combined outcome	↓2%/2 years
2016	LEADER	GLP	liraglutide (Victoza)	POSITIVE	Mortality Combined outcome	↓1%/4 years ↓2.5%/4 years
2017	CANVAS	GLIF	canagliflozin (Invokana)	POSITIVE	Combined outcome Heart failure Amputations	↓2%/3.5 years ↓1%/3.5 years ↑1%/3.5 years
2017	EXSCEL	GLP	exenatide (Byetta)	NEUTRAL		
2017	ACE	OTH	acarbose (Procoese)	NEUTRAL		
2017	Omarigliptin	DPP4	omarigliptin	NEUTRAL		
2018	HARMONY	GLP	albiglutide (Tanzeum)	POSITIVE	Combined outcome	↓2%/2 years
2018	CARMELINA	DPP4	linagliptin (Tradjenta)	NEUTRAL		
2018	DECLARE-TIMI 58	GLIF	dapagliflozin (Farxiga)	POSITIVE	Combined outcome (primarily heart failure)	↓1%/4 years
2019	REWIND	GLP	dulaglutide (Trulicity)	POSITIVE	Combined outcome Renal outcomes	↓1.5%/5.4 years ↓2.5%/5.4 years
2019	PIONEER 6	GLP (oral)	semaglutide (Ozempic)	POSITIVE	CVD mortality Mortality	↓1%/1.5 years ↓1.5%/1.5 years
2019	CREDENCE		canagliflozin (Invokana)	POSITIVE	Combined CVD outcome Combined renal outcome outcomes	↓2.5%/2.6 years ↓3%/2.6 years

# Three “sobering” but very empowering concepts

## **SYMPTOMS**

If a patient seems to be getting a benefit from a medication for symptoms they likely aren't

## **PREVENTION**

If a patient is on a medication for risk reduction (BP, chol, glucose BMD) the benefit they are receiving is likely not large enough for them to make up for the cost, inconvenience and adverse effects

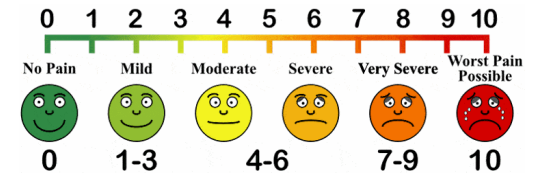
## **DOSE**

If a patient is on a medication they are likely on too high a dose



Symptom  
Pearls

# Symptoms



Scales - VAS, QOL, SGRQ - then what is the MICD

% of people who benefit in the treatment arm - that will be what you see in practice over placebo

% of people who benefit in the placebo arm - subtract that from the treatment to see how many actually benefit from the medication

Head-to-head studies are relatively uncommon

6-8 weeks	No longer depressed
Medication	50%
Placebo	40%
Medication benefit	$50 - 40 = 10\%$
If person responds, the chance it is the medication	$10 / 50 = 20\%$



But you need to know what goes on in the placebo group

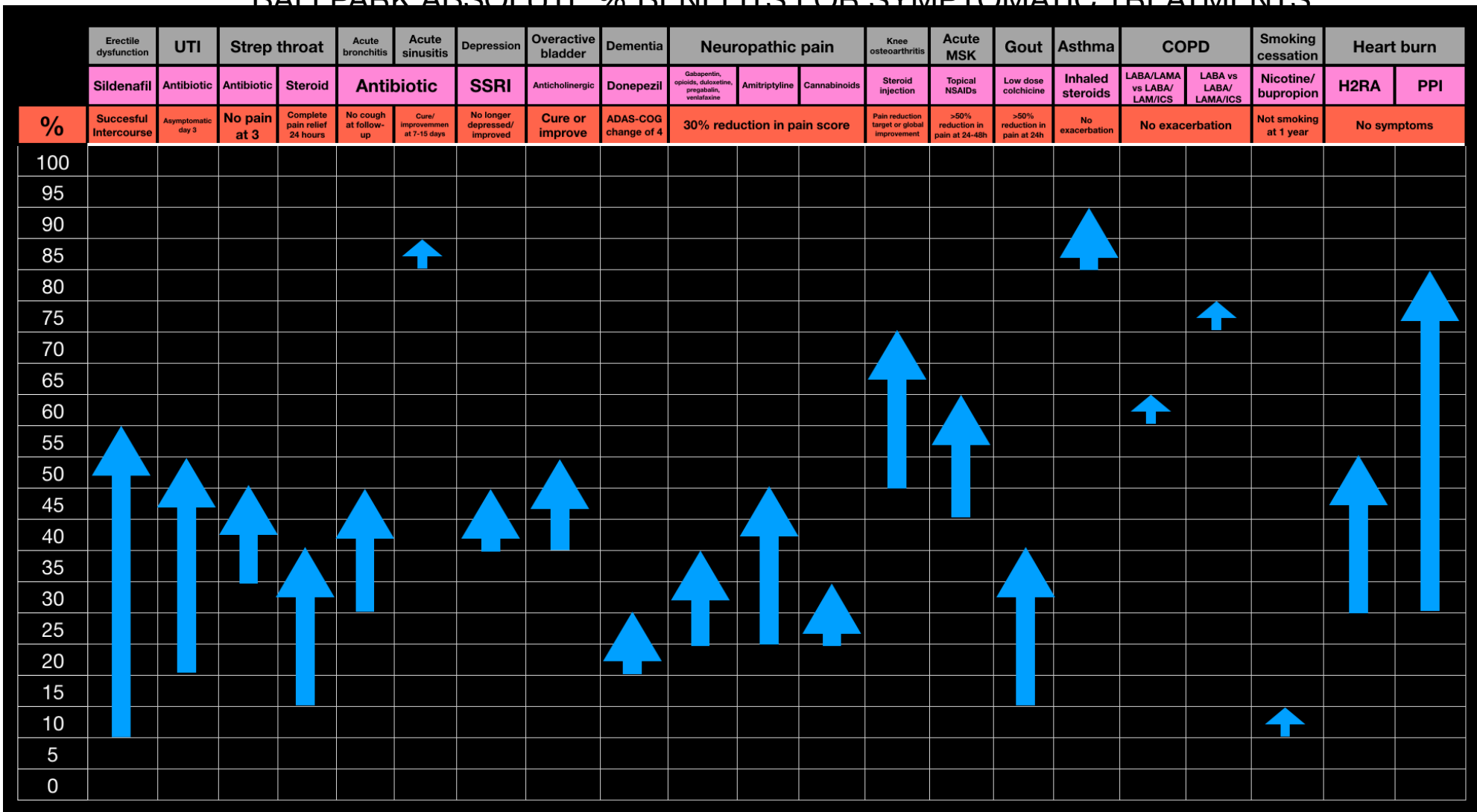
	If person “responds”, what is the % chance it was the medication	
Response in the placebo group	If Benefit 10% - NNT 10	If Benefit 20% - NNT 5
0%	~100%	~100%
20%	~33%	~50%
40%	~20%	~33%

# The Placebo Group Effect

not the placebo effect and these are ballpark numbers

- ~0% - general anesthesia
- ~5% - psychosis
- ~10% - sildenafil, OCD
- ~20% - Alzheimer's meds, acetaminophen for headaches, side effects
- ~25% - menopausal symptoms, migraine (frequency/severity)
- ~30% - blood pressure goal, depression, anxiety, PTSD, PPIs/H2RA, sore throat, NSAIDs for OA, inhalers for COPD
- ~40% - panic disorders

# BALL PARK ABSOLUTE % BENEFITS FOR SYMPTOMATIC TREATMENTS





# Prevention Pearls

# Math 101 - actually grade 5

**REMEMBER - X% of Y - “OF” means multiply**

# WHAT IS THE ABSOLUTE BENEFIT %?

	Relative benefit (%)				
BASELINE RISK (%)	10	15	20	25	30
10					
15					
20					
30					

# WHAT IS THE NNT?

[illegible]

# Ballpark Risks (CVD, fractures etc)

<https://therapeuticseducation.org/tools>

**The Absolute CVD Risk/Benefit Calculator**

**Framingham** QRISK®2-2014 ACC/AHA ASCVD

Heart attack + stroke Heart attack + stroke Heart attack + stroke

Age: 50 years

Gender: Male

Smoker: Yes

Diabetes: Yes

Systolic Blood Pressure: 120 mmHg

Total Cholesterol: 3 mmol/L

HDL Cholesterol: 1.3 mmol/L

Family History of Early CHD: 0%

Relative Benefit: 0%

Risk Time Period: 10 years

97.6% No event

2.4% Total with an event

0.0% Number who benefit from treatment

NNT: ∞

Baseline events using baseline factors alone: 2.4%

Additional events "caused" by risk factors: 0.0%

Switch to "Reset" View

**Stroke Risk (CHA2DS2-VASc)**

Age: 65-74

TIA or stroke (at any time in the past): No

Prior MI, peripheral artery disease, or aortic plaque: No

Female: No

CHA2DS2-VASc SCORE (0-9): 3

**Major Bleeding Risk (HAS-BLED\*)**

Abnormal renal/liver function (creatinine <30 or bilirubin >2x ULN): No

Hypertension (SBP >160 mmHg): No

Abnormal liver function (bilirubin >2x ULN): No

History of major bleeding (any cause): No

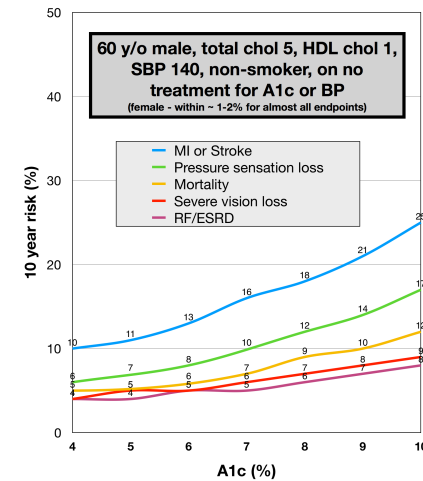
HAS-BLED SCORE (0-9): 1

**Which therapy options to HIDE?**

Aspirin, Aspirin+Clopidogrel, Warfarin, Dabigatran, Rivaroxaban, Apixiban, Edoxaban

**PERCENT PER YEAR**

Therapy	Annual risk of stroke/embolism	Annual risk of major bleeding (intracranial bleeding, bleeding requiring hospitalization, Hgb decrease of >20 g/L, or need for transfusion secondary to bleed)
NO THERAPY	4.3%	0.6%
ASPIRIN	3.4%	1.1%
WARFARIN	1.4%	2.2%
DABIGATRAN 110	1.4%	1.8%
DABIGATRAN 150	0.9%	2.2%
RIVAROXABAN	1.4%	2.2%
APIXABAN	1.1%	1.5%



[cvdcalculator.com](http://cvdcalculator.com)

[sparctool.com](http://sparctool.com)

<https://sanjaybasu.shinyapps.io/recodesi/>

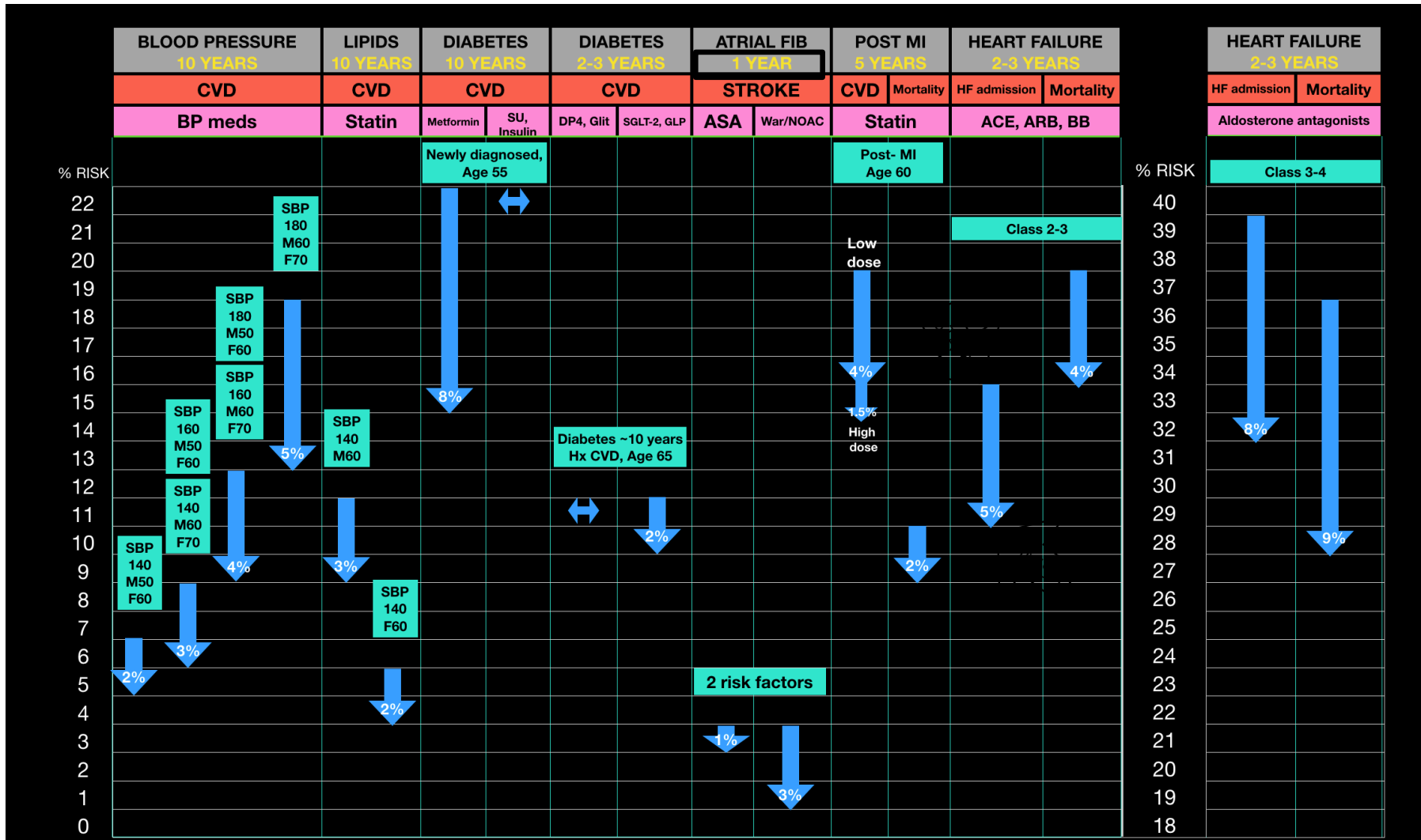
RISK FACTORS	Zero			One			Two		
	-1.5	-2.5	-3.5	-1.5	-2.5	-3.5	-1.5	-2.5	-3.5
<b>Female</b>									
50	4	5/1	9/4	6	8/2	14/7	8	12/3	21/11
60	7	10/2	16/6	10/1	14/3	23/9	14/1	20/5	32/14
70	9/1	13/3	21/7	12/1	18/4	30/11	16/2	25/6	41/16
80	13/3	18/6	29/14	17/6	26/12	40/24	24/10	35/20	52/37
<b>Male</b>									
50	4	5/2	11/6	5	8/3	16/10	8/1	12/5	24/16
60	6/1	9/3	15/8	8/1	12/4	21/11	12/2	18/6	29/17
70	6/2	10/4	16/8	9/3	14/6	22/13	12/4	19/10	31/20
80	7/3	11/5	16/9	11/5	16/9	23/16	15/9	22/15	32/25

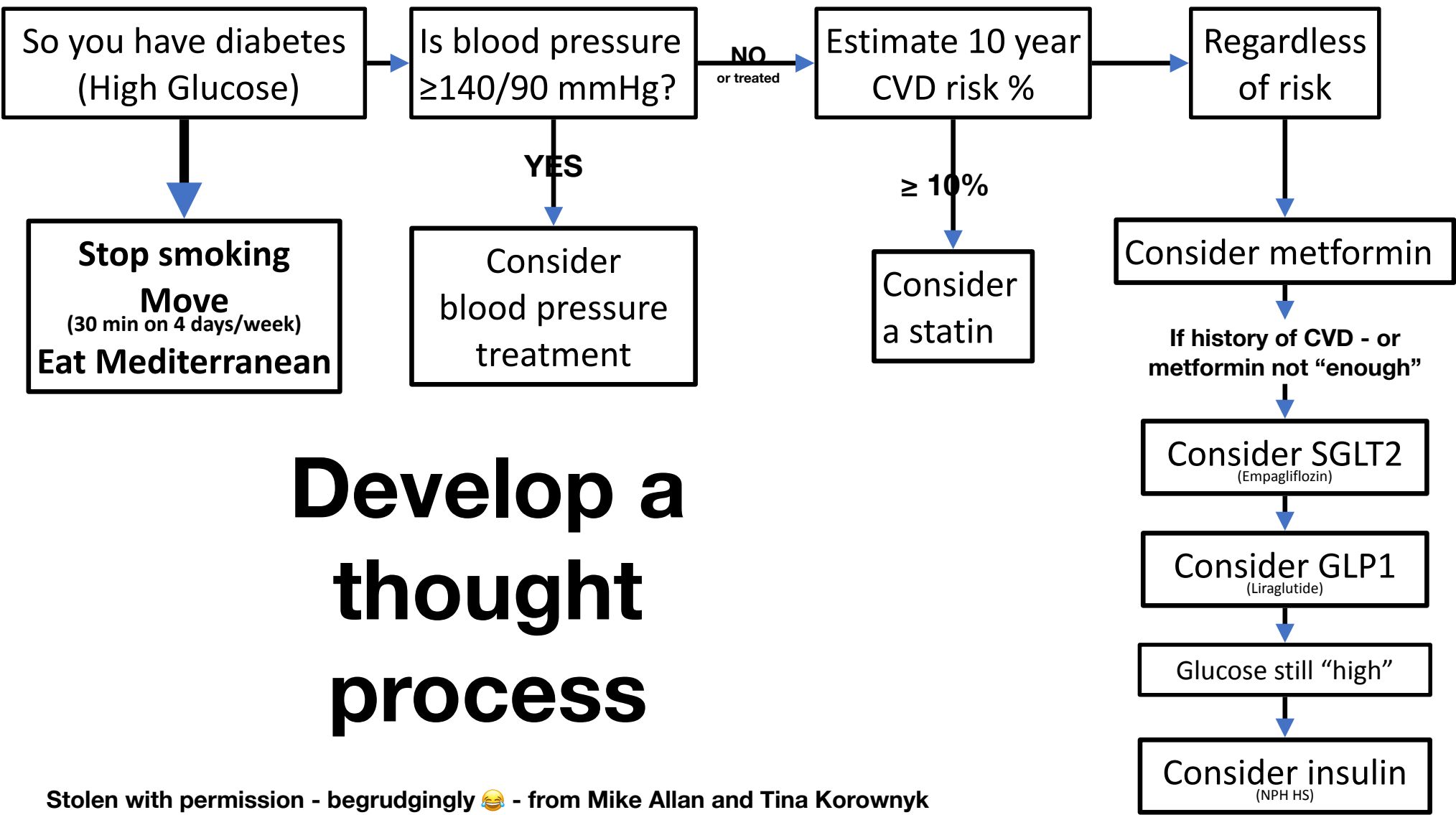


## BALLPARK RELATIVE % BENEFITS FOR CARDIOVASCULAR PREVENTATIVE TREATMENTS

	Lifestyle	Cholesterol	Blood pressure	Glucose	A fib	Heart failure
RRR%	Cardiovascular events				Stroke	Mortality
100	Stopping smoking (obviously no RCTs) CVD but also cancer and lung issues					
95						
90						
85						
80						
75						
70						
65					Warfarin/NOACS	
60						
55						
50			Blood pressure diabetes			
45						
40						
35		Statins		Metformin?		
30	Mediterranean diet		Blood pressure			
25	Physical Activity plus QOL				Aspirin	ACEI, BB, Aldo antag
20						
15		PCSK9 Monoclonal antibodies		SGLT2, GLP		
10		Aspirin				
5		Ezetimibe				
0		Fibrate, niacin		DPP4, SU, insulin, glitazone		

# BALLPARK ABSOLUTE % BENEFITS FOR PREVENTATIVE TREATMENTS





**Develop a  
thought  
process**

Stolen with permission - begrudgingly 😂 - from Mike Allan and Tina Korownyk

# A Reasonable Side Effect List

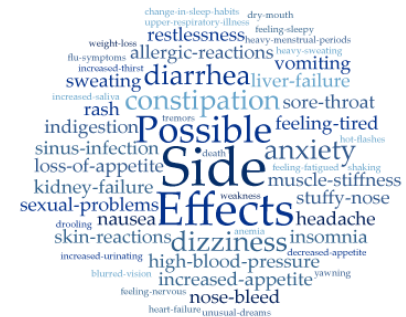
An unsolvable problem?



They are not captured well/completely/understandably in studies - but likely the best we have

Rarely can we figure out rare side effects

Many monographs, books, studies, websites just list a variety of symptoms, often with no numbers, no context, no idea of the duration, severity, frequency, statistical significance?



ORIGINAL ARTICLE

## Marine n-3 Fatty Acids and Prevention of Cardiovascular Disease and Cancer

This is a !@#\$\$%  
5.3 year study

**Table S7.** Hazard Ratios (HR) and 95% Confidence Intervals (CI) for Safety and Adverse Events by Randomized Assignment to Omega-3 Fatty Acids (n-3) compared to Placebo

	No. of Events				
Outcome	n-3 (N = 12,933)	Placebo (N = 12,938)	HR	95% CI	P-value
Monitored safety conditions					
Gastrointestinal bleeding	370	374	0.99	0.86-1.14	0.89
Blood in urine	919	874	1.06	0.96-1.16	0.25
Easy bruising	3443	3399	1.02	0.97-1.07	0.48
Frequent nosebleeds	465	491	0.95	0.83-1.07	0.40
Kidney failure or dialysis	85	88	0.97	0.72-1.30	0.82
Other symptoms and side effects					
Stomach upset or pain	4887	4843	1.01	0.97-1.05	0.72
Nausea	3558	3550	1.00	0.96-1.05	0.94
Constipation	5184	5111	1.01	0.97-1.05	0.51
Diarrhea	5599	5580	1.00	0.97-1.04	0.77
Skin rash	3331	3367	0.99	0.94-1.03	0.58
Bad taste in mouth	2240	2245	1.00	0.95-1.06	0.92
Increased burping	2217	2158	1.03	0.97-1.10	0.29

How are these not 100%

	A	B	N	O	P	Q	R	S	T	U	V
1		Drug class (ENG)	Statins		Proton pump inhibitor		Proton pump inhibitor		Proton pump inhibitor		Proton p
2		Drug class (FR)	Statines		Inhibiteur de la pompe à protons		Inhibiteur de la pompe à protons		Inhibiteur de la pompe à protons		Inhibiteu
3		Drug name (generic - ENG)	Lovastatin		Lansoprazole		Esomeprazole		Omeprazole		Dexlanso
4		Other drug synonyms (ENG)	Apo-Lovastatin; Co Lovastatin; Pro-		Apo-Lansoprazole; Mylan-Lansoprazole; pr		ACT Esomeprazole; Apo-Esomeprazole; Myli		Apo-Omeprazole; Auro-Omeprazol		Dexilant
5		Drug name (generic - FR)	Lovastatine		Lansoprazole		Esomeprazole		Omeprazole		Dexlanse
6		Other drug synonyms (FR)	Apo-Lovastatin; Co Lovastatin; Pro-		Apo-Lansoprazole; Mylan-Lansoprazole; pr		ACT Esomeprazole; Apo-Esomeprazole; Myli		Apo-Omeprazole; Auro-Omepra		Dexilant
7		Drug name (brand)	Mevacor		Prevacid		Nexium		Lozac, Olex		Dexilant
8	Side effect category		%	Category	%	Category	%	Category	%	Category	%
9		Headache	7.7*	1-10%	2.1*	1-10%	2.1*	1-10%	2.1*	1-10%	2.1*
10		Seizure		0		0		0		0	
11	Neurologic	Pins and needles sensation	1	1-10%			0		0		0
12		Insomnia		0			0				0
13		Trembling					0		0		0
14		Angina		0 >1		1-10%	>1		1-10%	>1	>1
15		Suicidal thoughts		0			0		0		0
16		Depression		0			0				0
17		Strange dreams		0			0		0		0
18		Confusion		0			0				0
19	Psychiatric	Anxiety		0 1.7		1-10%	1.7		1-10%	1.7	1.7
20		Difficulty falling asleep	1.9	1-10%	2.1	1-10%	2.1		1-10%	2.1	2.1
21		Anxiety disorders	2.3	1-10%	<1	0,1-1%	<1		0,1-1%	<1	<1
22		Nervousness		0			0		0		0
23		Feeling jittery					0				0
24		Difficulty breathing		0 1.1		1-10%	1.1		1-10%	1.1	1.1
25	Respiratory	Throat or nose infection		0 8.5		1-10%	8.5		1-10%	8.5	8.5
26		Coughing		0			0		0		0
27		Fainting					0				0
28		Cold fingers & toes		0			0		0		0
29		High blood pressure		0 2.6		1-10%	2.6		1-10%	2.6	2.6
30		Flushing		0			0				0
31		High blood pressure		0			0		0		0
32	Cardiovascular	Dizziness when standing up		0			0				0
33		Chest pain		0 >1		1-10%	>1		1-10%	>1	>1
Display a menu CAMILLE Sheet Explore											



### Your Medication's Side Effects

[Home](#) [About](#) [Disclaimer](#) [Contact](#)

Language: [English \(EN\)](#)

[I think I have a side effect](#)

[Search for another medication](#)

## Atorvastatin (Lipitor)

This medications is generally used to treat the following conditions:

None reported

- Constipation
- Diarrhea
- Headache
- Liver damage
- Muscle and/or joint pain
- Nausea or vomiting
- Stomach ache

– High blood sugar

People aged over 65 should be aware that this medication increases the risk of:

- Diarrhea
- Falls



# Costs



Generic Name	Brand name	Strength	Dosing	90 Day Cost (unless otherwise noted)	Coverage
<b>HYPOGLYCEMIC AGENTS</b>					
<b>Biguanides</b>					
<b>Metformin</b>	Glucophage	500mg	2 BID	<b>\$30</b>	BC / IA covered
Metformin SR	<b>Glumetza SR</b>	1000mg	2 QD	<b>\$255</b>	NC by BC or IA
<b>Sulfonylureas</b>					
<b>Glyburide</b>	Diabeta	5mg	BID	<b>\$25</b>	BC / IA covered
<b>Gliclazide, Gliclazide MR</b>	Diamicon/MR	80mg/30mg MR	BID, 2 QD MR	<b>\$30</b>	BC / IA covered
<b>Meglitinides</b>					
<b>Repaglinide</b>	Gluconorm	1mg	TID	<b>\$35</b>	BC / IA covered
<b>Dipeptidylpeptidase-4 Inhibitors (DPP-4)</b>					
Linagliptin	<b>Trajenta</b>	5mg	QD	<b>\$265</b>	SA req'd for BC and IA
Saxagliptin	<b>Onglyza</b>	5mg	QD	<b>\$295</b>	SA req'd for BC and IA
Sitagliptin	<b>Januvia</b>	100mg	QD	<b>\$310</b>	SA req'd for BC and IA
<b>Sodium Glucose Cotransporter 2 (SGLT2) Inhibitors</b>					
Empagliflozin	<b>Jardiance</b>	10mg	QD	<b>\$270</b>	SA req'd for BC and IA
Canagliflozin	<b>Invokana</b>	100mg	QD	<b>\$280</b>	SA req'd for BC and IA
<b>Glucagon-like Peptide 1 Agonist (GLP-1)</b>					
Liraglutide	<b>Victoza</b>	1.2mg SQ	QD	<b>\$575</b>	NC by BC or IA
Liraglutide	<b>Victoza</b>	1.8mg SQ	QD	<b>\$855</b>	NC by BC or IA
<b>Insulin (Prices may vary between pharmacies, relative differences likely consistent. Max allowable price for 1500 Units of penfill insulin)</b>					
Regular insulin	<b>Novolin Toronto/ Humulin R</b>	100U/mL	As dir	<b>\$60</b>	BC / IA covered
Long-acting insulin	<b>Novolin NPH/Humulin N</b>	100U/mL	As dir	<b>\$65</b>	BC / IA covered
Rapid-acting insulin	<b>Novorapid/Humalog</b>	100U/mL	As dir	<b>\$75</b>	BC / IA covered
<b>Basal insulin (Glargine)</b>	Basaglar	100U/mL	As dir	<b>\$90</b>	BC covered, NC by IA
Basal insulin (Glargine)	<b>Toujeo</b>	300U/mL	As dir	<b>\$110</b>	NC by BC or IA
Basal insulin (Glargine)	<b>Lantus</b>	100U/mL	As dir	<b>\$115</b>	BC / IA covered
Basal insulin (Detemir)	<b>Levemir</b>	100U/mL	As dir	<b>\$130</b>	BC / IA covered
<b>OBESITY</b>					
Orlistat	<b>Xenical</b>	120mg	TID	<b>\$505</b>	NC by BC or IA
Liraglutide	<b>Saxenda</b>	3mg SQ	QD	<b>\$1,165</b>	NC by BC or IA
<b>LEGEND:</b> BC = Alberta Blue Cross, IA = Indian Affairs, NC = Not covered, SA = special authorization, SR = sustained release, OTC = over the counter, SQ = subcutaneous injection, SS=Social Services					

<https://www.acfp.ca/wp-content/uploads/2018/03/ACFPPricingDoc2018.pdf>

# Inconvenience

Get the prescription



Fill the prescription



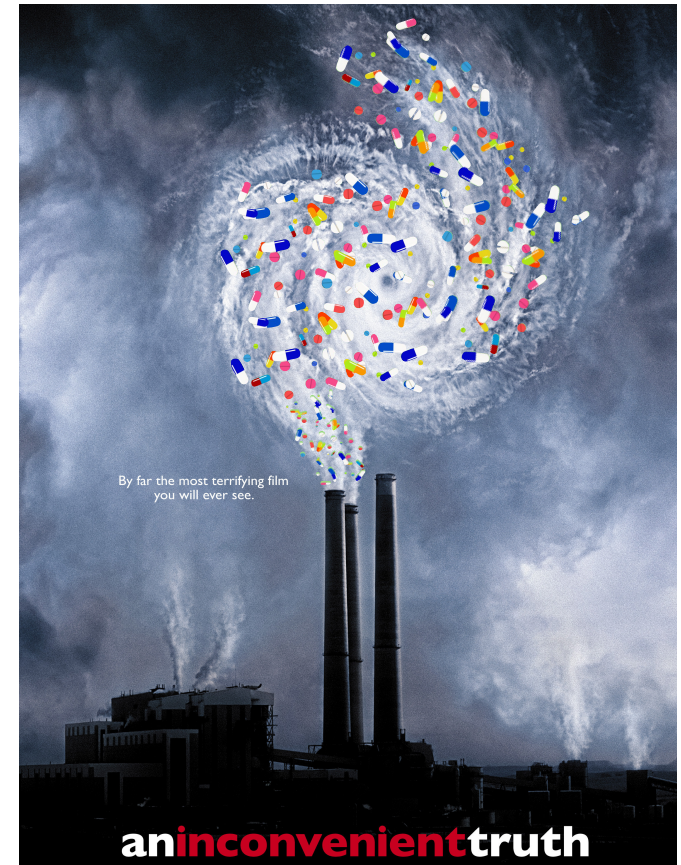
Pay for the prescription



Take the prescription



Labelling/worry



RESEARCH ARTICLE

Open Access

## Can shared decision-making reduce medical malpractice litigation? A systematic review

Marie-Anne Durand<sup>1,2\*</sup>, Benjamin Moulton<sup>3,4,5</sup>, Elizabeth Cockle<sup>2</sup>, Mala Mann<sup>6</sup> and Glyn Elwyn<sup>1,7</sup>

“There is insufficient evidence to determine whether or not shared decision-making and the use of decision support interventions can reduce medical malpractice litigation. Further investigation is required.”

## Two or more reasonable treatment or screening options

### Shared decision-making model

### Defensive medicine model

## ADVERSE OUTCOME OCCURS

Choice made does **NOT**  
**MEET** the “standard of care”

Choice made **MEETS** the  
“standard of care”

Choice made **MEETS**  
the “standard of care”

Choice made does **NOT**  
**MEET** the “standard of care”

Discussion  
NOT  
documented

Discussion  
documented  
in notes

Decision  
aid used

Discussion  
NOT  
documented

Discussion  
documented  
in notes

Decision  
aid used

**Plaintiffs lawyer argues risks and  
benefits should have been discussed**

Low to  
medium  
risk

No medico  
legal  
protection

No medico  
legal  
protection

Medium  
risk

Low  
risk

Low to  
medium  
risk

Low  
risk

Low  
risk

## **Defensive model** (guidelines/standard of care)

NEVER get to a low litigation risk

Low to  
medium  
risk

## Reducing litigation risk 2 THINGS to DO

### **Shared decision-making model**

1) Use a decision aid

2) Document decision

Low  
risk