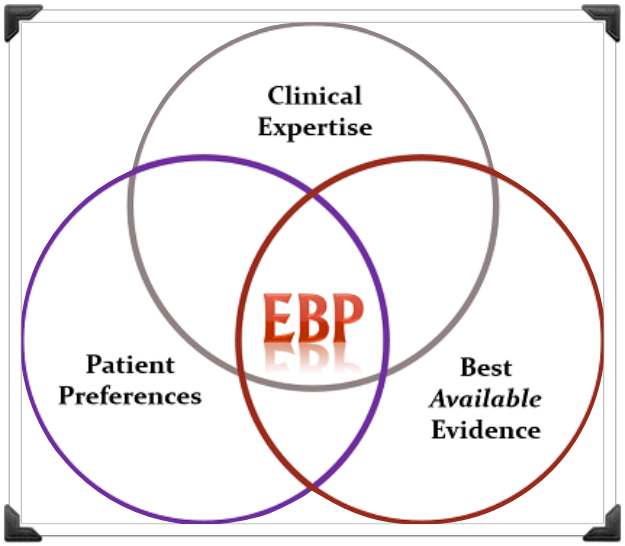
MYTHS

FACTS

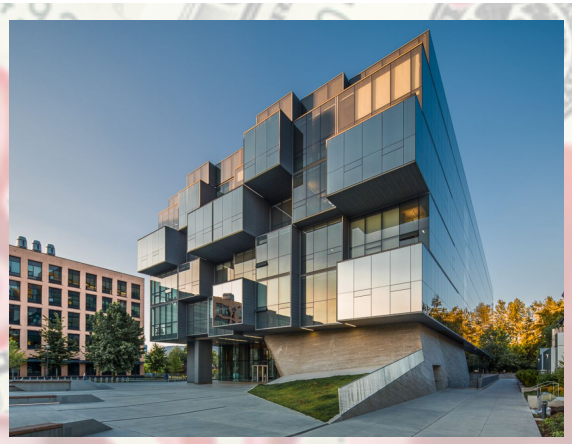

## Evidence Based Practice

# Who I am

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

therapeuticseducation.org
medicationmythbusters.com



- 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

# Our Agenda


1) The Set-Up ~15-25 minutes

2) Nutrition - What we know (very little) and what we will likely never know (a lot) about nutrition ~ 1.5 hours

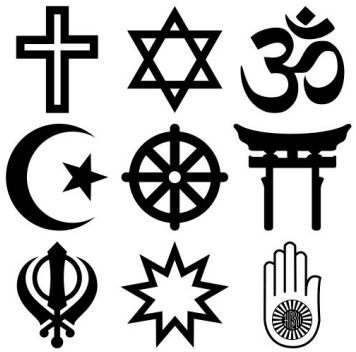
2) Medical marijuana - a drug by any other name ~ 1 hour

3) Lab tests - REPORTING ‘lab’ results - the cause of, AND the solution to, the overdiagnosis problem ~ 1.5 hours

4) Clinical practice guidelines - do they cause more problems than they help ~ 1 hour

5) Media, marketing and medications - Filtering out the nonsense, by using common sense ~ 1 hour

# MY BELIEF



All Health Care Providers should have their practice underpinned by the best available evidence

Evidence-Based Practice (EBP)


# Best Available Evidence

# 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
Brianne 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



# 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

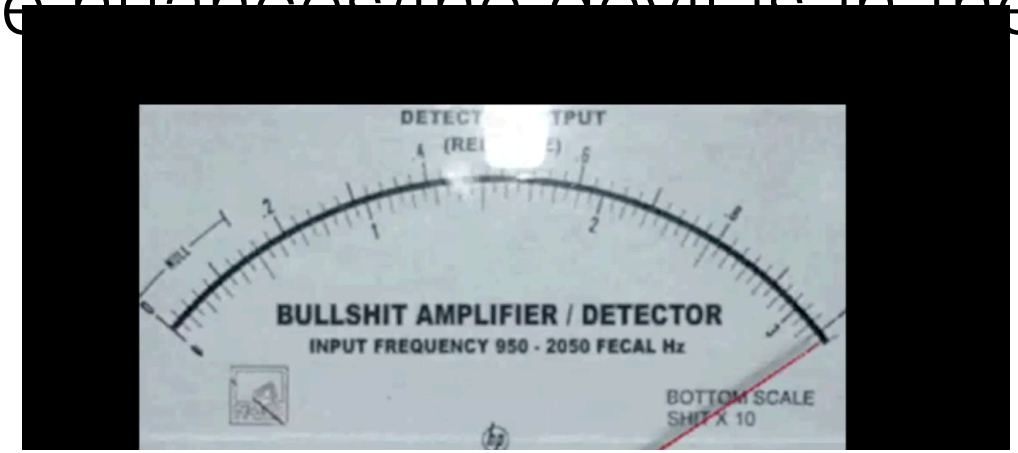
# I have developed a lot of Pet Peeves over the Years


# Apply the BS detector to any health recommendation

1) whether it be a benefit or a harm

2) made by the drug industry, a university person, a government official, a colleague, a run of the mill whack-job

3) dig into the nuances/the devil is in the details



# There is NO ultimate conspiracy

The VAST majority of

- Healthcare providers want to help you get the “right” treatment and make a living
- Government people want people to get the “right” treatments to the “right” people at a reasonable cost
- Regulators want the “right” treatment to be approved
- Drug company people want to develop the “right” treatments that are useful but obviously make a profit

Despite the best of intentions, when all of these systems are intertwined it creates a reasonable chance you WON'T get the right treatment for YOU.

This problem is NOT that FIXABLE, but it is KNOWABLE


Never attribute to conspiracy what can be explained by the operation of rational self-interest

Essay

# Why Most Published Research Findings Are False

John P. A. Ioannidis

"It can be proven that most claimed research findings are false."

PLOS Medicine 2005;696-701

ESSAY

# Why Most Clinical Research Is Not Useful

**John P. A. Ioannidis**[1,2]*

"Overall, not only are most research findings false, but, furthermore, most of the true findings are not useful."

PLOS Medicine 2016 | DOI:10.1371/journal.pmed.1002049

# The Bullsh*t Asymmetry

The amount of energy needed to refute bullsh*t is an order of magnitude bigger than to produce it.

the * is for sensitive registrants

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

*Benjamin Djulbegovic, Gordon H Guyatt*

# Problematic quality of care continues

Estimates from the US suggest:

more than 30% of health care is inappropriate or wasteful
between 70,000 and a 1/3 of all deaths occur as a result of medical errors
only 55% of needed health services are delivered

Lancet 2017;390:415–23

**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

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

*Benjamin Djulbegovic, Gordon H Guyatt*

"on average, clinicians need to be aware of only about 20 new articles per year (99·96% noise reduction) to keep up to date, and, to stay up to date in their area of expertise"

Lancet 2017;390:415–23


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

Korownyk C, Kolber MR, McCormack J, Lam V, Overbo K, Cotton C, Finley C, Turgeon RD, Garrison S, Lindblad AJ, Banh HL, Campbell-Scherer D, Vandermeer B, Allan GM

Brit Med J 2014;349:g7346 doi: 10.1136/bmj.g7346

Published 17 December 2014

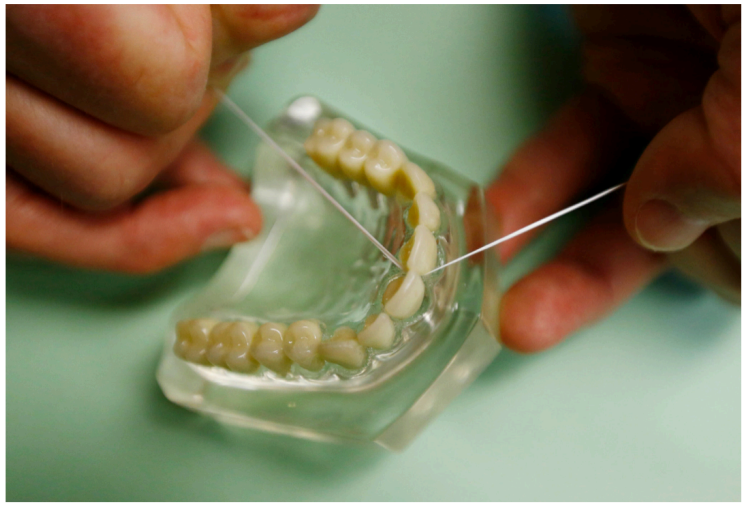
# “Believable” Evidence for Recommendations


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

BMJ 2014;349:g7346

The New York Times

# *Feeling Guilty About Not Flossing? Maybe There's No Need*



Julio Cortez/Associated Press

**August 2016**

By Catherine Saint Louis

# Flossing for the management of periodontal diseases and dental caries in adults (Review)

Cochrane Library

**2012**

Sambunjak D, Nickerson JW, Poklepovic T, Johnson TM, Imai P, Tugwell P, Worthington HV

12 trials - 1083 participants

Flossing +brushing vs brushing alone

“Overall there is weak, very unreliable evidence which suggests that flossing plus toothbrushing may be associated with a small reduction in plaque at 1 or 3 months”

Loe-Silness gingivitis index - 0-3 point scale

1-month - 0.13 reduction
3-month - 0.20 reduction
6-month - 0.09 reduction

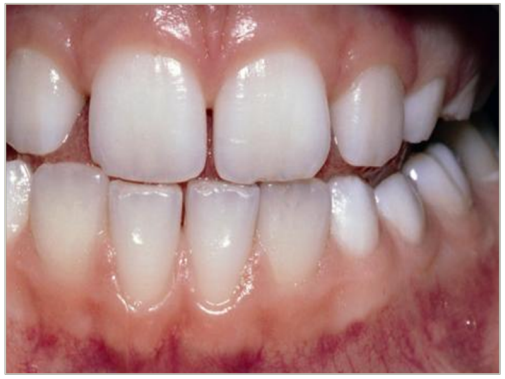
**Dental caries not evaluated!**

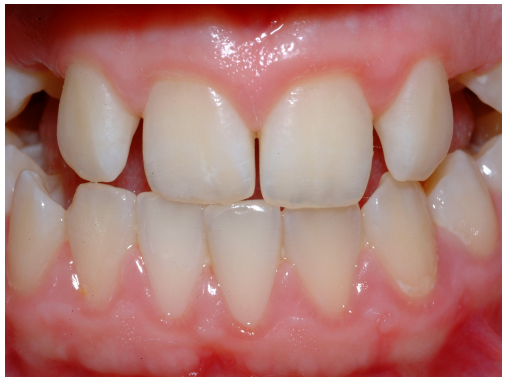
# Loe-Silness gingivitis index

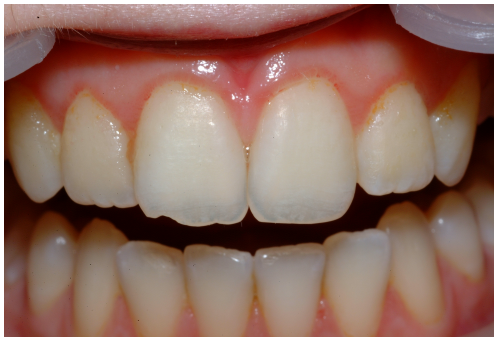
| 0 | 1 | 2 | 3 |
|---|---|---|---|
| Absence of inflammation | Mild inflammation; slight change in colour and little change in texture | Moderate inflammation; moderate glazing, redness, oedema and hypertrophy; bleeding on pressure | Severe inflammation; marked redness and hypertrophy; tendency to spontaneous bleeding; ulceration |

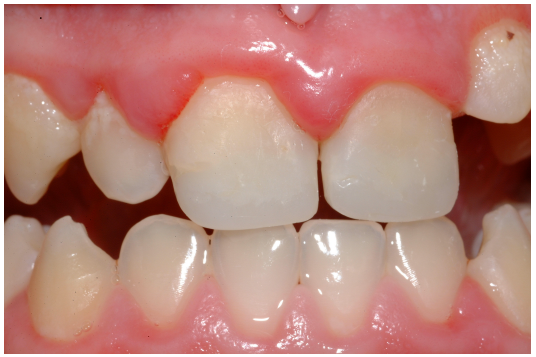
0.1

**0.2**









# Interdental brushing for the prevention and control of periodontal diseases and dental caries in adults (Review)

**2013**

Poklepovic T, Worthington HV, Johnson TM, Sambunjak D, Imai P, Clarkson JE, Tugwell P

7 studies 354 participants

“There is also low-quality evidence from seven studies that interdental brushing reduces gingivitis when compared with flossing, but these results were only found at one month. There was insufficient evidence to determine whether interdental brushing reduced or increased levels of plaque when compared to flossing.”

**Routine scale and polish for periodontal health in adults (Review)**

Lamont T, Worthington HV, Clarkson JE, Beirne PV

2018

Cochrane Library

## 2 trials - 1711 participants without severe periodontitis

6 and 12 month scale and polish vs no scheduled treatment
At 24-36 months
Gingivitis - no difference
Plaque - no difference
Probing depth - no difference
Calculus/tartar - small effect size - clinical importance?

6 versus 12 month scale and polish - same as above

**Root coverage procedures for treating localised and multiple recession-type defects (Review)**

Chambrone L, Salinas Ortega MA, Sukekava F, Rotundo R, Kalemaj Z, [illegible]

**2018**

Cochrane Library

48 RCTs trials - 1227 participants

6 and 12 month follow-up

free gingival grafts (FGG)

coronally advanced flap (CAF) alone or associated to acellular dermal matrix grafts (ADMG)

enamel matrix protein (EMP)

guided tissue regeneration with resorbable membranes (GTR rm)

guided tissue regeneration with non-resorbable membranes (GTR nrm)

GTR rm associated with bone substitutes

platelet-rich plasma or fibrin (PRP or PRF)

growth factors (rhPDGF-BB) associated to bone substitutes (b-TCP)

subepithelial connective tissue grafts (SCTG)

xenogeneic collagen matrix (XCM)

**“The results of this review have shown that most root coverage periodontal plastic surgery procedures led to gains in reduction of gingival recession. However, we are uncertain about which intervention is the most effective as all studies were judged to be at unclear or high risk of bias.”**

**Fluoride toothpastes of different concentrations for preventing dental caries (Review)**

Walsh T, Worthington HV, Glenny AM, Marinho VCC, Jeroncic A **2019** Cochrane Library

96 RCTs trials - children, adolescents, adults

36 month follow-up - change from baseline in the decayed, (missing), and filled surface or teeth index in all permanent teeth erupted at the start and erupting over the course of the study - also looked at proportion developing new caries

**“there is high-certainty evidence that toothpaste containing 1000 to 1250 ppm fluoride is more effective than non-fluoride toothpaste.”**

# % of children or adolescents (age 5-15) developing new caries

86 studies - 27% of studies reported supervised brushing,
65% reported water fluoridation (9 had >0.50ppm)

| | Lower concentration | Higher concentration | Follow-up |
|---|---|---|---|
| 0 ppm vs 250 ppm | No difference | | 24 months |
| 0 ppm vs 1000-1250 ppm | 60% | 54%* | 12-60 months |
| 0 ppm vs 1500 ppm | 95% | 90% | 36 months |
| 1250 ppm vs 1450-1500 ppm | No difference | | 36 months |

*** RR - 0.90 (0.77-1.06)**

# Antibiotic prophylaxis for infective endocarditis: a systematic review and meta-analysis

Antibiotic prophylaxis has been recommended prior to dental procedures in patients at risk of IE for 50 years

No RCTs looking at infective endocarditis

10 time-trend studies, 5 observational studies and 21 trials of participants undergoing dental procedures - looked at bacteraemia - ~ 50% reduction - 70% down to 35%

Case control studies suggest this does not protect against IE

**Heart 2017;103:937–944**