"We should stop using clinical practice guidelines when it comes to teaching health care providers - or should we?"

James McCormack, BSc(Pharm), Pharm D Professor, Faculty of Pharmaceutical Sciences, UBC

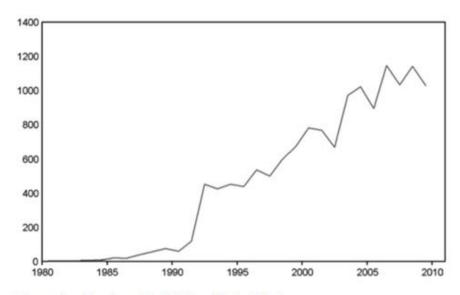


Figure 1 Number of guidelines in PubMed.

Objectives

Describe the uses and limitations of CPGs

Identify web-based resources that can be used to find CPGs

Appraise the quality of CPGs to determine how much you should trust the recommendations

Describe how to use CPGs in practice

Discuss the legal issues associated with using or not using CPGs

MY BELIEF



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

Evidence-Based Practice (EBP)



Best Available Evidence

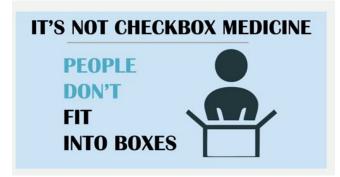
Nothing in there about guidelines



IT'S NOT ABOUT GUIDELINES

140/90 < 6.5% < 2.0

GUIDELINES RARELY
CONSIDER
PATIENT
PREFERENCES



IT'S NOT SOMETHING "NEW"



DOING THE RIGHT THING IS NOT A NEW IDEA

IT'S NOT ABOUT SAVING MONEY



RATIONING
IS NOT THE
MOTIVE

IT'S NOT ABOUT RCTs



RCTs ARE USEFUL BUT THEY ONLY HELP

INFORM DECISIONS

 $p<0.05 \neq GOOD p>0.05 \neq BAD$

TO S NOT NECESSARILY ABOUT INFLUENCING OUTCOMES Heart attacks, strokes, renal failure, symptoms Quality of life, people on evidence-based treatments YEAR 1 YEAR 2 YEAR 3 YEAR 4

IT'S NOT ABOUT IGNORING BASIC SCIENCE





WE NEED TO UNDERSTAND HOW IT WORKS

IT'S NOT ABOUT ZERO COMPETING INTERESTS

RESEARCH COSTS MONEY SOMEBODY HAS TO

PAY FOR IT



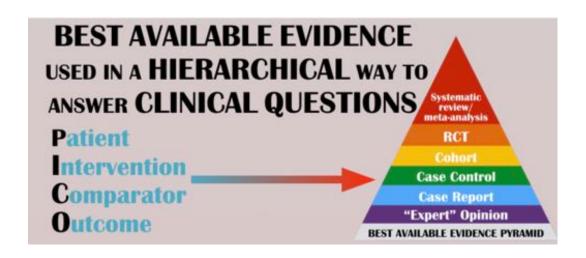
WHAT IT IS



IT'S A WAY OF THINKING



EVIDENCE-BASED PRACTICE







What is a Clinical Practice Guideline (CPG)?

The Institute of Medicine definition:

"...statements that include recommendations, intended to optimize patient care, that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options"

Clinical Practice Guidelines in Practice and Education

Alfred O. Berg, MD, MPH, David Atkins, MD, MPH, William Tierney, MD

1997 - THE REASONS FOR INTEREST IN QUALITY CLINICAL PRACTICE GUIDELINES

"medical history is littered with clinical practice guidelines that have been fatally incorrect"

"the physician's ability to keep up with the medical literature erodes with each year's burden"

"costly and unexplained variability in medical practice"

"growing demand from patients for greater participation in medical decisions"



The Number of Guidelines

Diseases/conditions - 2,983 Treatments/interventions - 7,364

~10,000 guidelines ~10 pages each?

~100,000 pages

500 pages ~ 2 inches

400 inches ~ 33 feet ~ 10 meters

Highest pole vaulter ~ 20 feet ~ 6 meters

War and Peace is ~1500 pages ~ 70 copies



Wrong guidelines: why and how often they occur

Primiano Iannone, Nicola Montano, Monica Minardi, James Doyle, Paolo Cavagnaro, Antonino Cartabellotta

"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."

Wrong guidelines: why and how often they occur

Primiano Iannone,¹ Nicola Montano,² Monica Minardi,³ James Doyle,³ Paolo Cavagnaro,⁴ Antonino Cartabellotta⁵

"guideline reliability is largely over-stated, and guidelines still suffer methodological flaws, limited panel composition and conflicts of interests, making their conclusions often untrustworthy. Even when evidence-based methodology is claimed, it is often not fully adopted and the 'evidence-based quality mark' gets misappropriated by vested interests"

Wrong guidelines: why and how often they occur

Primiano Iannone, Nicola Montano, Monica Minardi, James Doyle, Paolo Cavagnaro, Antonino Cartabellotta

"Furthermore, no official, publicly accountable, reliable, independent and unconflicted rating agency of published guidelines exists."

Where to find CPGs

Canadian Medical Association Infobase (Canada) - Clinical Practice Guidelines - www.cma.ca/cpgs

National Guideline Clearinghouse (USA) - www.guideline.gov

National Health Service Evidence (UK) - www.evidence.nhs.uk)

Clinical Practice Guidelines Portal (Australia) - www.clinicalguidelines.gov.au

Turning Research Into Practice (TRIP) - www.tripdatabase.com

PubMed - can limit a search to practice guideline

Just do a google search

How to assess CPGs

Appraisal Tools for Clinical Practice Guidelines: A Systematic Review

"the most comprehensively validated appraisal tool is the AGREE II instrument

PLoS ONE 8(12): e82915. doi:10.1371/journal.pone.0082915

Appraisal of Guidelines for Research and Evaluation (AGREE) II

DOMAIN 1. SCOPE AND PURPOSE

DOMAIN 2. STAKEHOLDER INVOLVEMENT

DOMAIN 3. RIGOUR OF DEVELOPMENT

DOMAIN 4. CLARITY OF PRESENTATION

DOMAIN 5. APPLICABILITY

DOMAIN 6. EDITORIAL INDEPENDENCE

OVERALL GUIDELINE ASSESSMENT

How to use CPGs

Is the CPG trustworthy?

Is the CPG applicable to your patient?

Is the CPG setting similar to your practice?

Does the CPG reflect you or your patient's values and preferences?

Reassessment of Clinical Practice Guidelines Go Gently Into That Good Night

Terrence M. Shaneyfelt, MD, MPH	of 44 guidelines, 87% of the guideline authors had some form			
Robert M. Centor, MD	of industry tie. Other biases are also important. The specialty composi-			

often "have a one-size-fits-all mentality and do not build flexibility or contextualization into the recommendations"

"greater concern, however, is that some of these consensus statements are being turned into performance measures"

JAMA 2009;301:868-9

STATEMENT

Rethinking the Role of Clinical Practice Guidelines in Pharmacy Education

Daniel L. Brown, PharmD

Palm Beach Atlantic University Lloyd L. Gregory School of Pharmacy, West Palm Beach, Florida

"CPGs can undermine clinical growth by providing a tempting academic short-cut: memorizing clinical facts rather than learning clinical principles"

Clinical Practice Guidelines and Scientific Evidence

Francesco Enia, MD

JAMA. 2009;302(2):142-147. doi:10.1001/jama.2009.910

"Rather than endeavor to design a map with an answer for every question, I believe that it would be preferable to educate clinicians to handle clinical reality directly and without filtered advice"

Clinical Practice Guidelines and Scientific Evidence

Shyam S. Kothari, MD

"Bombarding students with guidelines for all scenarios ... may seem more efficient in the short-term but does little to enhance discriminatory skills and numbs the facility for critical thinking."

JAMA 2009;302:145

Spectrum of Decisions

Immediate life-threatening issues or very "technical" work - surgery, dispensing etc - YES **Guidelines, even policies, are likely very useful**

Symptom treatment - SORT OF

Each person is an experiment - need to know just what has the potential to work and the safety

Risk factor interventions - NO

At least not what CPGs are now

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

Typically "evidence-based" guideline recommendations are not based on "solid" evidence



Scientific Evidence Underlying the ACC/AHA Clinical Practice Guidelines

Pierluigi Tricoci; Joseph M. Allen; Judith M. Kramer; et al. JAMA. 2009;301(8):831-841 (doi:10.1001/jama.2009.205) Analysis of Overall Level of Evidence Behind Infectious Diseases Society of America Practice Guidelines

Dong Heun Lee, MD; Ole Vielemeyer, MD Arch Intern Med. 2011;171(1):18-22

Clinical Endocrinology (2013) 78, 183-190

doi: 10.1111/j.1365-2265.2012.04441.x

METHODOLOGICAL ASSESSMENT IN ENDOCRINOLOGY

A comparative quality assessment of evidence-based clinical guidelines in endocrinology

EVIDENCE	1/ -040101001		Endocrinology	
1 or A based on RCTs	11%	14%	6%	
3 or C based on opinion	48%	55%	35%	



The quality of clinical practice guidelines over the last two decades: a systematic review of guideline appraisal studies

Table 2 Appraisal of Guidelines, Research and Evaluation domain scores of guidelines over time (total sample=608)

ou tar and	1988—1992 (n=9)	1993-1997 (n=102)	1998-2002 (n = 291)	2003-2007 (n=206)	p Value for trend			
Domain scores	Top Score = 100%							
Scope and purpose	44	61	60	71	< 0.001			
Stakeholder involvement	18	38	33	37	0.01			
Rigour of development	14	41	43	44	0.003			
Clarity and presentation	32	56	55	68	< 0.001			
Applicability	10	30	18	23	< 0.001			
Editorial independence	17	30	28	33	0.26			

Engaging the right people, quality of evidence appraisal, providing useful tools, and competing interests have not improved in 14 years (1993-2007)

Qual Saf Health Care 2010;19:e58. doi:10.1136/qshc.2010.042077

Recent examples of Guideline Quality/Rigour

AGREE II (Appraisal of Guidelines for Research and Evaluation) is the instrument typically used **- 207 guidelines**

```
avg 55% - neuropathic pain - 16 CPGs - range 27%-88% - BMC Anesthesiology 2016;16:12
avg 30% - hypertension - 11 CPGS - range 8%-86% - PLoS ONE 2013 8(1): e53744
avg 32% - asthma - 18 CPGs - range 8%-64% - Chest 2013 144: 390-7
avg 48% - diabetes - 24 CPGs - range 0%-81% - PLoS ONE 2013 8(4): e58625
avg 20% - vancomycin - 12 CPGs - range 4%-73% - PLoS ONE 2013 9(6): e99044
avg 18% - hypertension (China) - 17 CPGs - range 1-36% - BMJ Open 2015;5:e008099
    8% respiratory (China) - 109 CPGs - range 0%-27% - Chest 2015;148:759-766
```

August 2016

Original Article

Glycemic Control for Patients With Type 2 Diabetes Mellitus Our Evolving Faith in the Face of Evidence

René Rodríguez-Gutiérrez, MD, MSc; Victor M. Montori, MD, MSc

Evidence since 1998 for Tight glycemic control (A1c 6.5%-7%) vs less tight (A1c 7%-8.5%)

Endpoints - End Stage Renal Disease/dialysis, renal death, blindness or clinical neuropathy

5 large trials, 8 meta-analyses, 2 follow-up trials

31 estimates of outcomes

2 (6%) suggested benefit

29 (94%) suggested NO benefit

Endpoints - all-cause mortality, CV mortality, non-fatal MIs, stroke, amputations/PVD

5 large trials, 10 meta-analyses, 5 follow-up trials

78 estimates of outcomes

10 (13%) suggested benefit

64 (82%) suggested NO benefit

4 (5%) suggested harm

Circ Cardiovasc Qual Outcomes. 2016;9:00-00. DOI: 10.1161

Overall estimates of benefits and harms (micro and macro)

11% of estimates = a benefit
4% of estimates = harm
85% of estimates = no benefit

despite this, over the last 10 years "practice guidelines and published statements offer a
consistent and confident consensus, with 100% of the
guidelines and 77% to 100% of the statements in favor of
tight glycemic control to prevent microvascular
complications"



Contributors to primary care guidelines

What are their professions and how many of them have conflicts of interest?

G. Michael Allan MD CCFP Roni Kraut Aven Crawshay Christina Korownyk MD CCFP
Ben Vandermeer MSc Michael R. Kolber MD CCFP MSc

176 PRIMARY CARE guidelines in the CMA database

CONTRIBUTORS

54% non-family physician specialists

17% family physicians - 8% if industry sponsored

11% other clinicians

8% non-clinician scientists

6% nurses

3% pharmacists

69% of guidelines didn't report conflicts of interest

Can Fam Physician 2015;61:52-8

Guideline sponsorship

2009 - 2,300 guidelines in the National Guideline Clearinghouse Guideline development

41% - medical speciality societies

22% - government agencies/nonprofit

17% - professional associations

9% - disease specific societies

4% - independent expert panels

at least 2/3 are being developed by groups with a clear potential for important biases

Prevalence of financial conflicts of interest among panel members producing clinical practice guidelines in Canada and United States: cross sectional study

~50-80% of panel members on guidelines have financial COIs

BMJ 2011;343:d5621 doi: 10.1136/bmj.d5621

EVIDENCE BASED MEDICINE

Why we can't trust clinical guidelines BMJ;2013:346

Despite repeated calls to prohibit or limit conflicts of interests among authors and sponsors of clinical guidelines, the problem persists. **Jeanne Lenzer** investigates

Adding "value" to clinical practice guidelines

James P. McCormack PharmD Peter Loewen PharmD

5 Canadian Guidelines for blood pressure, cholesterol, glucose, and bone density

197 PAGES - 90,000 WORDS

99(0.1%) words - relevant to patients' values and preferences

Can Fam Physician 2007;53:1326-27

Management of Hyperglycemia in Type 2 Diabetes, 2015: A Patient-Centered Approach

Update to a Position Statement of the American Diabetes Association and the European Association for the Study of Diabetes

Diabetes Care 2015;38:140-149 | DOI: 10.2337/dc14-2441



January 2015 Volume 38, Supplement 1

Standards of Medical Care in Diabetes-2015

Diabetes Care January 2015

113 PAGES

Looked for info on
Risk estimation (magnitude)
Impact of treatment on risk
Potential harms (magnitude)

"The information presented in these documents is glucosecentric and not organized or presented in a way that could be construed as supporting shared decision making"

Guidelines

Hypertension Canada's 2016 Canadian Hypertension Education Program Guidelines for Blood Pressure Measurement, Diagnosis, Assessment of Risk, Prevention, and Treatment of Hypertension

~11,800 words - 20 pages

Total mention of values and preferences - 0.19% of the words

"Practitioners are advised to consider patient preferences, values, and clinical factors when determining how to best apply these recommendations at the bedside"

"In the absence of Canadian data to determine the accuracy of risk calculations, **avoid using absolute levels of risk** to support treatment decisions"

Treatment of Low Bone Density or Osteoporosis to Prevent Fractures in Men and Women: A Clinical Practice Guideline Update from the American College of Physicians

~8,700 words - 27 pages

Benefits

No numbers whatsoever for fracture risk or fracture benefit Do present info in an appendix - new studies

Harms 2017

28 numeric mentions of side effects

6 absolute numbers

22 relative numbers

One mention of patient preferences

Recommendation 6: ACP recommends that clinicians should make the decision whether to treat osteopenic women 65 years of age or older who are at a high risk for fracture based on a discussion of patient preferences, fracture risk profile, and benefits, harms, and costs of medications. (Grade: weak recommendation; low-quality evidence)



2017

CLINICAL GUIDELINE

Treatment of Low Bone Density or Osteoporosis to Prevent Fractures in Men and Women: A Clinical Practice Guideline Update from the American College of Physicians

Recommendations: Recommendation 1: ACP recommends that clinicians offer pharmacologic treatment with alendronate, risedronate, zoledronic acid, or denosumab to reduce the risk for hip and vertebral fractures in women who have known osteoporosis. (Grade: strong recommendation; high-quality evidence)

"Evidence is insufficient to determine the comparative effectiveness of pharmacologic therapy or the superiority of one medication over another, within the same class or among classes, for prevention of fractures"

The data also do not support monitoring BMD during the initial 5 years of treatment in patients receiving pharmacologic agents to treat osteoporosis. Clinicians should select generic drugs to treat osteoporotic patients when possible



2017

Treatment of Low Bone Density or Osteoporosis to Prevent Fractures in Men and Women: A Clinical Practice Guideline Update from the American College of Physicians

"The data do not support monitoring BMD during the initial 5 years of treatment in patients receiving pharmacologic agents to treat osteoporosis."

Patients' Expectations of the Benefits and Harms of Treatments, Screening, and Tests A Systematic Review

Tammy C. Hoffmann, PhD; Chris Del Mar, MD, FRACGP

BENEFIT - 88% of study authors concluded that participants **overestimated benefits**

HARM - 67% underestimated harm

Evaluating physician understanding of harms and benefits of common tests and therapies

Paper survey to residents and attending internal medicine physicians
– 18 questions – 117 people responded

	Estimate of benefit in absolute terms								
Green cells are the correct answer	<1%	1 to 5%	5 to 10%	10 to 20%	20 to 45%	45 to 70%	70 to 100%		
	Percent of respondents								
Mild HTM F	4.4	25	20	10	7		1		
Aspirin with rick actors 5/ years	OVE	res	stim	atec	d be	nefi	3		
Aspirir in CVD 5 years	0	16	29	30	16	8	0		
Warfa in Afi	3V	ere	SIIN	nate	0120	arm	0		
Ho fracture osteo orosis 5 years)/ ³ \/	24 O Y (30	24	fi ¹³	nf	0		
Death from bleed with	/O ₂₁ V	٧Ģ١			mye	116	1		
Cancer diagnosis among + screening	4	14	23	35	18	7	0		
Major bleeding with ASA 5 years	21	46	21	8	3	0	0		
Major bleeding with warfarin 1 year	14	42	30	11	2	2	0		
Unneccessary biopsy with screening 10 years	1	9	15	33	26	15	0		

307 subjects using a written questionnaire and interview

Results

Patients	Median acceptable		ıld take a "safe" for 5 years	Absolute % benefit	% who wanted to be
	absolute % benefit threshold	If benefit over 5 years was < 5%	If benefit over 5 years was < 5% AND their MD recommended it	they felt they were getting from their drug	told percent chance of benefit
Post MI patients	20	32	69	70	79
On drugs	20	29	74	68	72
No drugs	30	21	56	_	84

Clin Med 2002;2:527-33

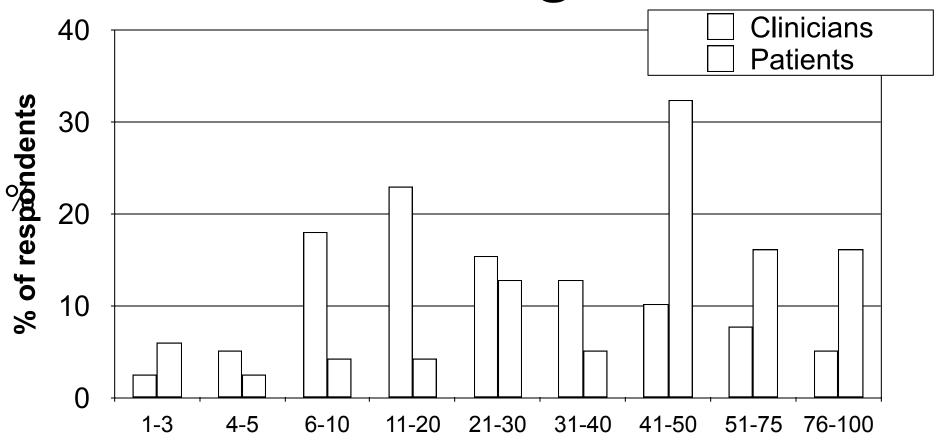
Ability of clinicians to make an estimate of CHD risk

53 residents, 8 fellows, 18 attending physicians

The **mean degree of over-estimation** compared to the Framingham estimate:

low-risk scenarios - **7.8 times** medium-risk scenarios - **2.8 times** high-risk scenarios - **1.5 times**

What is "High Risk"



Chance of a heart attack in the next 5 years (%)

Factors involved in deciding to start preventive treatment: qualitative study of clinicians' and lay people's attitudes

David K Lewis, Jude Robinson, Ewan Wilkinson

Qualitative study using semi-structured interviews

"Many of the preferences expressed by the clinicians and lay people in this study are at odds with recommendations in guidelines"

Differing perceptions of intervention thresholds for fracture risk: a survey of patients and doctors

Did NOT ask patients to consider side effects or drug cost, just the dosing regimen, in the decision

"A typical patient in our study required a 50% absolute fracture risk and

50% relative risk reduction (giving an absolute risk reduction of 25%) before considering long-term drug therapy"

A prominent current guideline ... recommends pharmacologic intervention at thresholds of 10- year risk of 20% for major osteoporotic fracture or 3% for hip fracture

125 (77%) of doctors would recommend treatment 24 (21%) of our patient cohort would consider treatment justified

20 "NEGATIVE" STUDIES IN

(niacing in) BLOOD PRESS (niacing in) BLOOD PRESS (page 1,8% ARTITUDE e) 1,6% ARTITUDE AIM-HIGH, HPS2-7HIR dibo ARI (KIKAE). JT blopaggrassiv (irbesartan/afib) ₹ESCENDO (rimonabant) VISTA-16 (varespladib) 182,000+ MI 53 (saxagliptin) **EXAMINE** (alogliptin) patients

ALECARDIO (aleglitazar)

Patient preferences for shared decisions: A systematic review

Betty Chewning a,*, Carma L. Bylund b, Bupendra Shah c, Neeraj K. Arora d, Jennifer A. Gueguen e, Gregory Makoul f

"In three quarters of the cancer studies ... the majority of patients preferred shared or autonomous decision making. In contrast, this was true for only about half of the studies with non- disease specific study populations"

"the number of patients who prefer participation has increased over the past three decades so that the majority of patients prefer to participate in decisions"

Guidelines and the Law

"As per the Canadian Medical Association Handbook on Clinical Practice Guidelines, guidelines should NOT be used as a legal resource in malpractice cases as "their more general nature renders them insensitive to the particular circumstances of the individual cases."



A Publication of the Professional Sections of the Canadian Diabetes Association

Une publication des sections professionnelles de l'Association canadienne du diabète



The Bottom Line

Sep 2011

Even an authoritative CPG may NOT be found to be determinative of a standard of care.

It is prudent for physicians to be aware of authoritative clinical practice guidelines relevant to their practices. If a clinical decision may be perceived as being contrary to a recognized and accepted CPG, a physician, where appropriate, may consider the following steps: consult with a colleague or relevant specialist, discuss reasonable treatment options with the patient, and document the patient's consent for the chosen treatment.

If deviating from an established CPG, physicians should consider documenting the rationale for doing so, as well as any discussions with the patient about such variance.

Many courts (UK, US, CA)

"The reasonable-patient standard ... requires physicians and other health care practitioners to disclose all relevant information about the risks, benefits, and alternatives of a proposed treatment that an **OBJECTIVE PATIENT** would find material in making an intelligent decision as to whether to agree to the proposed procedure"



Expanding Disease Definitions in Guidelines and Expert Panel Ties to Industry: A Cross-sectional Study of Common Conditions in the United States

Raymond N. Moynihan¹*, Georga P. E. Cooke¹, Jenny A. Doust¹, Lisa Bero², Suzanne Hill³, Paul P. Glasziou¹

1 Bond University, Robina, Australia, 2 University of California, San Francisco, San Francisco, California, United States of America, 3 Australian National University, Acton, Australia

Of 16 publications on 14 common conditions, 10 widened and 1 narrowed definitions.

Widen by 3 methods: (i) "pre-disease"; (ii) lowering CONCLUSION: "research and policy attention might be directed at designing new processes for reviewing disease definitions, free of financial conflicts of interest and informed by rigorous analysis of benefits and harms." of proposed changes.

The average proportion of members with industry ties was 75%; 12/16 chairs had ties.



There are LOTS of guidelines

Often don't provide a solid synopsis/ systematic review of the best available evidence

Often don't provide sufficient information to do shared-decision-making or even support the concept

Many "conflicts" and ownership issues

Patient expectations are often at odds with guideline recommendations

Legal precedents are leaning in favour of benefit/harm communication

Education and Guidelines

Obviously inform you that CPG's exist

We all need to discuss up front the limitations and issues of clinical practice guidelines

We need to know how to appraise and integrate the best available evidence

Admit we don't have answers for everything

We need to help you think for yourselves and use commonsense

Need to be allowed to make "mistakes"

It is totally OK to go "against" the guidelines

The Guideline Solution?

What should guidelines contain?

Who should write them?

What should they not contain?

Are there examples of well-done guidelines?

Guidelines should provide ballpark estimates of what happens if you DON'T treat/test/screen and if you DO treat/test/screen

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

An Example of a Guideline that Promotes Discussion Rather than Treatment

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 MSe
Christine Schelstraete Kelly Zarnke MD MSe FRCPC Scott Garrison MD PhD CCFP Candra Cotton
Christina Korownyk MD CCFP James McCormack PharmD Sharon Nickel Michael R. Kolber MD CCFP MSe

Can Fam Physician 2015;61:857-67

Reducing Your Risk for **Heart Attacks & Strokes**

A SHIFT IN THINKING...

What's Changed?

If you asked anyone how to reduce your risk of a heart attack or stroke you'd likely hear them mention the need to lower your cholesterol.

However, many studies have shown Improving chalesteral does not always reduce risk of cardiovascular disease (heart attack or stroke). By worrying only about cholesterol we

helping the right people because cholesterol is only one risk

CHOLESTEROL ONLY TELLS US PART OF YOUR HEART HEALTH STORY

might

Medication

Statin therapy should be discussed with all people with



STATINS CAN REDUCE YOUR RISK OF HEART ATTACK AND TO 35%

moderate to cardiovascular risk (10% or more). Your healthcare provider can explain your STROKE BY 25% risk and how statins can reduce that risk by 25-35%.

A low-dose of ASA (Aspirin*) may also be recommended for further risk reduction if you are at high cardiovascular risk (20% or more) or have had a heart attack or stroke. ASA reduces cardiovascular risk by about 12.5% (half or third as effective as statins). Note - ASA can cause bleeding.

What are the side effects of statins?

All drugs come with



1 in every 10 to 20 people - muscle aches or stiffness*

1 in every 10,000

Are statins right for you?

You decide. Speak with your healthcare provider about your risk of cardiovascular disease and the benefits and risks of taking statins. Regardless of your decision, your healthcare provider will support you!

> This number is an educated guess of your chances of developing cardiovascular disease in the next 10 years. For example, a 10% risk means you have about a 1 in 10 chance of having a heart attack or stroke in the next 10 years.

What can you do to reduce your risk of heart attack or stroke?

Eat healthy - be active don't smoke

These lifestyle choices reduce your risk of cardiovascular disease and benefit your overall health.



tested?

Not taking a statin -- You should continue to have your cholesterol tested every 5 years.

Taking a statin → No. Once you have decided to take a statin a cholesterol test is unnecessary - statins help to reduce your cardiovascular risk no matter what your cholesterol level. So knowing your cholesterol level would not change your treatment plan.

Are statins right for you?

You decide. Speak with your healthcare provider about your risk of cardiovascular disease and the benefits and risks of taking statins. Regardless of your decision, your healthcare provider will support you!







Primary Prevention Secondary Prevention no previous cardiovascular disease previous cardiovascular disease Men aged ≥ 40 Compellingrisk OR) Women aged > 50 factor Test non-fasting lipid Estimate 10-year cardiovascular disease risk (See calculator options*) Risk 10-19% Risk < 10% **Risk** ≥ 20% Fincourage lifestyle thresholds for treatment Statin Initiated? No

 CK & ALT at baseline or for monitoring not required, perform as clinically indicated

Yes

- · Encourage adherence
- · Lipid monitoring not required