



JOHNS HOPKINS
BLOOMBERG
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*Information overload and
today's clinician:
the role of evidence-based
healthcare*

June 7, 2012

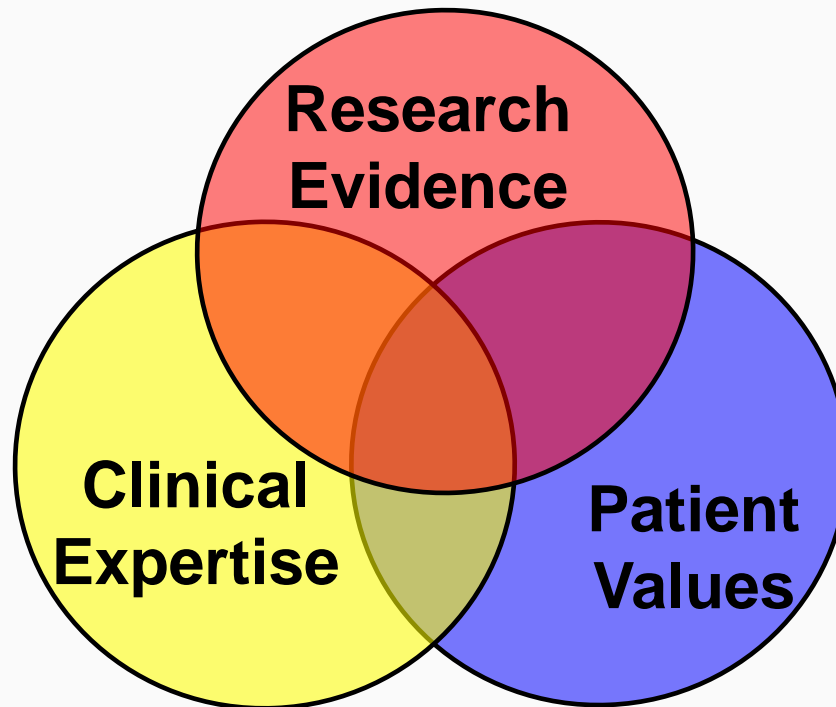
Roberta W. Scherer, PhD

US Cochrane Center

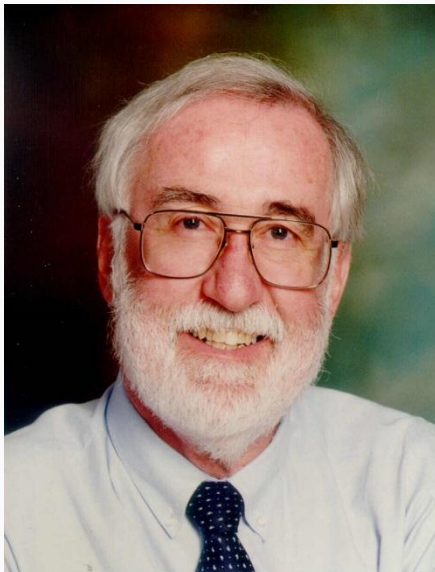


What is evidence-based healthcare?

The integration of best research evidence with clinical expertise and patient values



(Sackett et al EBM. New York: Churchill Livingstone 1998).



History of Evidence-based Medicine

- 1970s – a group of clinical epidemiologists at McMaster University began to plan a series of articles on how to read clinical journals.
- Articles on critical appraisal published in 1981 in the Canadian Medical Association Journal.
- Term *evidence-based medicine* coined in 1990 in an informational document for residents:

“The goal is to be aware of the evidence on which one’s practice is based, the soundness of the evidence, and the strength of the inference the evidence permits.”



“And part of what we want to do is to make sure that those decisions are being made by doctors and medical experts based on evidence, based on what works, because that's not how it's working right now.”

“The whole point of this is to try to encourage what works.”

President Barack Obama July 22, 2009

How Providers Make Decisions

- Primarily by what they usually do
- Consult with ‘expert’
- Convenience
- Billing opportunities
- Patient demand
- Look through guidelines, but consult them only if a “new” problem arises
- Rarely look up and use evidence directly

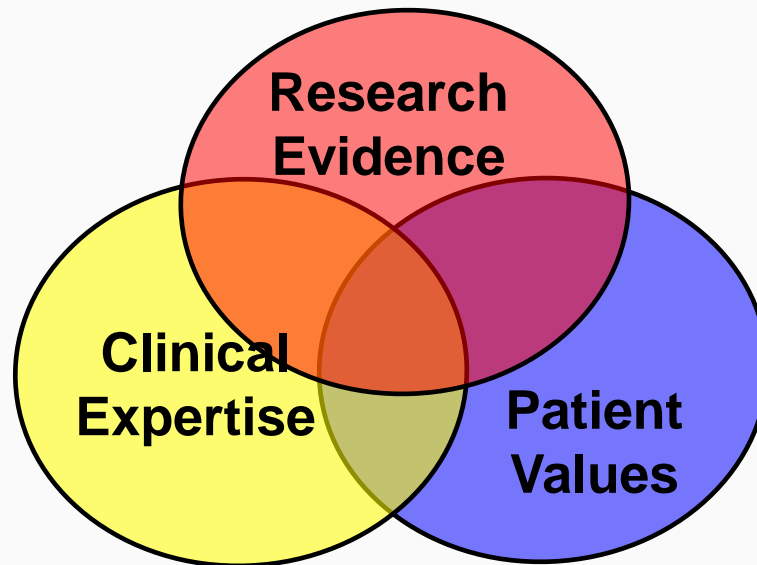
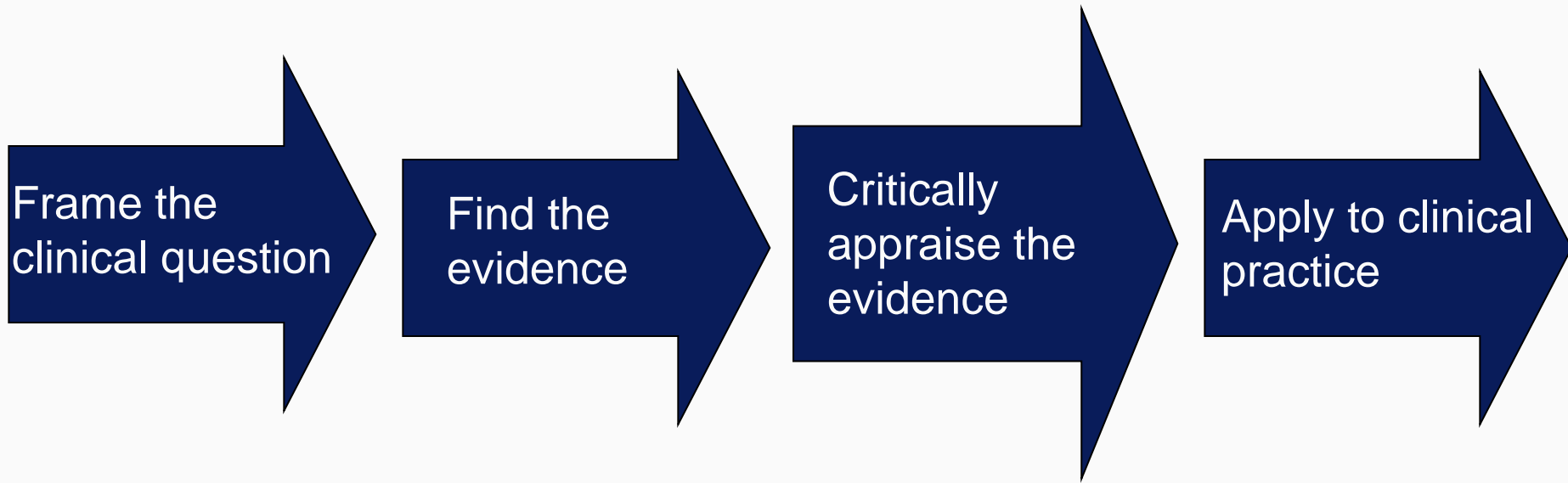
Medical decisionmaking

- Much clinical care research published
- Constant change in technology and treatment options
- Only tiny fraction of research is valid, important, and applicable to care
- Clinicians need information frequently
- ‘Usual’ sources of information – journal, experts, textbooks, CME programs - don’t work well at providing information when needed

Delay in translation of information

- Handwashing before delivering infants
 - Evidence of benefit in mid-19th century
 - Years before implemented in practice
- Thrombolytic drugs/secondary prevention of MI
 - Evidence of benefit clear by 1975
 - Books and reviews did not recommend until 1985 or later, but an additional 45,000 patients randomized
- Corticosteroids to prevent adverse outcomes in babies born prematurely
- Prevention of SIDS by placing babies on their backs

Steps in Evidence-Based Healthcare



Practicing evidence-based healthcare

A health care provider has to know how to:

- Know how to ask the question
- Find the information about trials on healthcare
- Sort through the plethora of available information
- Evaluate the quality of the information
- Organize the information
- Apply the information to the case in hand

Asking the right question - Clinician Questions

Clinicians have many types of questions in a single patient encounter:

Example: Patient with high blood pressure

- Risk factors for progression to heart disease
- Likelihood of progression
- Potential benefit of BP-lowering treatment
- Potential harm of BP-lowering treatment
- Potential differences in outcome if the patient is treated at 'borderline' hypertension
- Optimal degree of BP reduction

Finding the information – barriers

- There is too much information to assimilate
- Research evidence generally available in many short published papers
- Literature base is large and growing over 20,000 biomedical journals
- Literature is not organized

Barriers to EBM – too much information

To stay current with the literature in adult internal medicine:

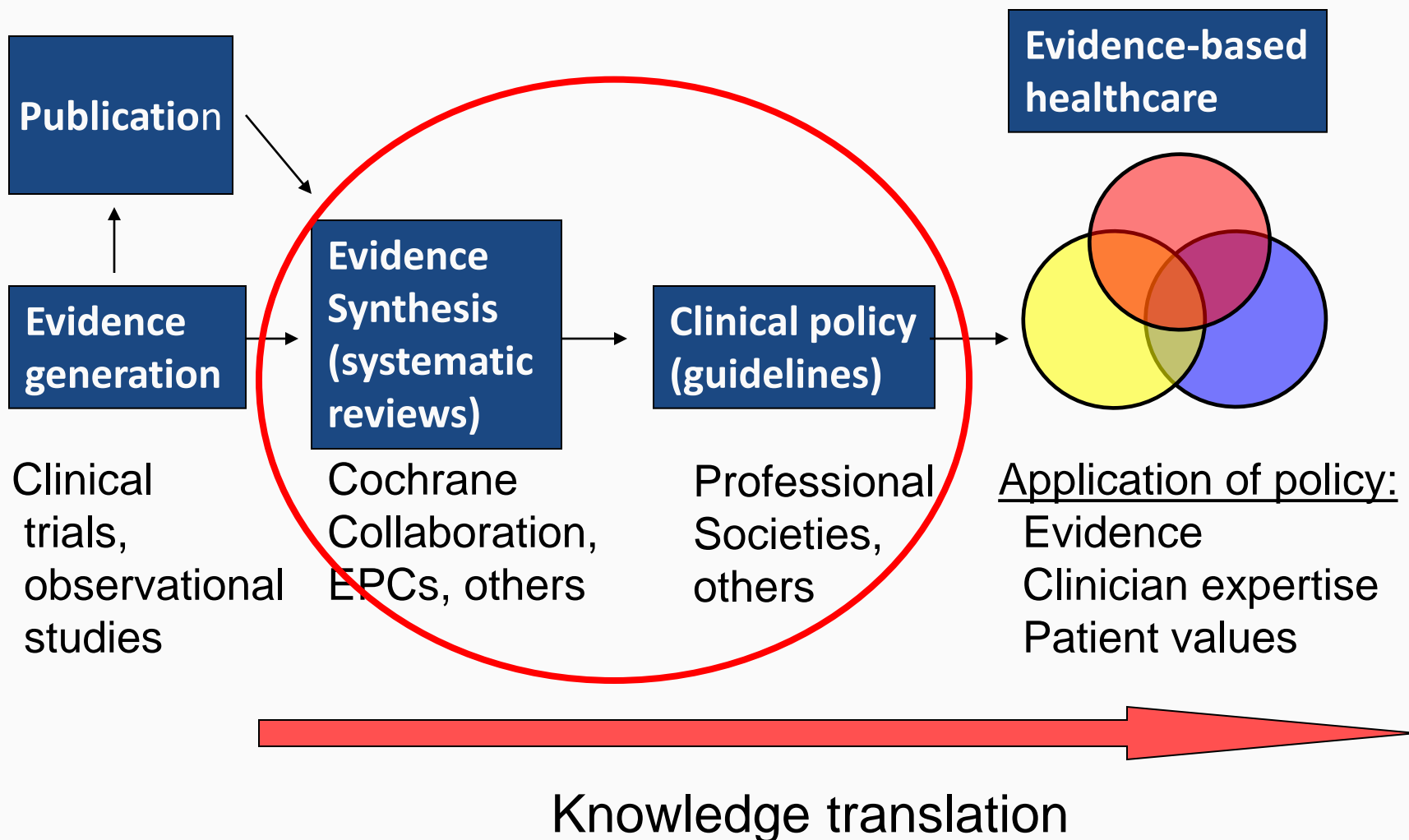
- Clinicians need to read:
 - 17 articles per day
 - 365 days per year
- Assuming:
 - 20 clinical journals reporting study of direct importance to clinical practice
 - Over 6,000 articles in these journals in 1992
- And this was 20 years ago!

The Consequent Result!

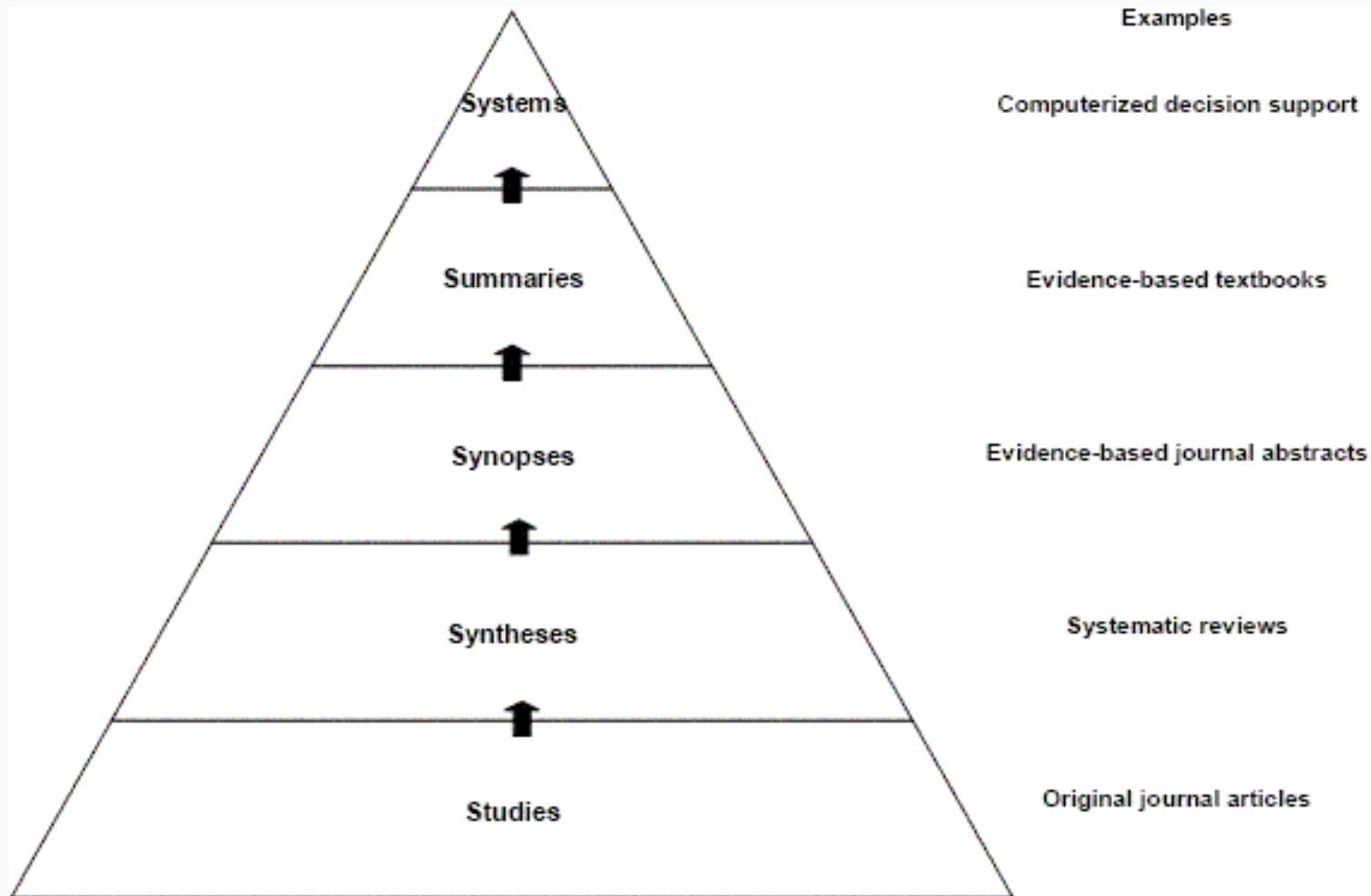


Knowledge translation:

From clinical research to practice decisions



Synthesis Resources for busy clinicians – 5S



Systems

- Evidence integrated in local computer systems
- Updated as new information becomes available
- Includes:
 - ▶ Electronic health records
 - ▶ Computerized drug ordering systems
 - Recommend medication type, dose, frequency
 - ▶ Clinical decision support systems
 - Reminders for screening, vaccine administration, preventive measures
 - Guidelines for diagnosis
 - Guidelines for management/treatment

Evidence for effectiveness of systems

- Computerized provider (drug) order entry systems
 - ▶ Improved dose and frequency of medication choice
 - ▶ Reduced pharmacist intervention for prescription errors
 - ▶ Increased provider compliance with EBM

- Clinical decision support for providers
 - ▶ Computerized standing orders more effective than reminders for vaccine administration
 - ▶ Guidelines for prevention VTE increase “appropriate prescription”, and decrease VTE in high risk patients
 - ▶ Computerized reminders led to higher screening rate for mood disorders than paper reminders
 - ▶ Increased adherence to guidelines for screening for latent TB infection

Summaries

- Summaries include “clinical pathways or textbook summaries that integrate evidence-based information about specific clinical problems’ – DiCenso 2009 Ann Int Med

- Examples include

- ▶ BMJs Clinical Evidence

The logo for ClinicalEvidence, with "Clinical" in blue and "Evidence" in green.

- ▶ Dynamed (EBSCO host)

The logo for DynaMed, with "DynaMed" in blue and "Powered by EBSCOhost" in smaller blue text below it.

- ▶ Physicians Information and Education Resource

The logo for the American College of Physicians' Physicians' Information and Education Resource (PIER). It features a red background with "American College of Physicians" in white at the top, "pier" in white lowercase letters in the center, and "Physicians' Information and Education Resource" in white at the bottom.

- ▶ UpToDate

The logo for UpToDate, with "UpToDate" in green.

- ▶ Clinical Guidelines (provided they are up to date and use evidence in their recommendations)

Show Conditions

Search Clinical Evidence

Discover more about EBM



Primary prevention of CVD: treating hypertension

Primary prevention of CVD: treating hypertension

Web publication date: 18 February 2010
(based on December 2007 search)

Joseph Cheriyan, Kevin M O'Shaughnessy
and Morris J Brown

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Efficacy (6)

Key points

GRADE table

Background

References

Credits

Citations (21)

Patient information (1)

Guidelines (19)

Overview

Hypertension, a clinically important elevation in blood pressure, is usually defined in adults as a diastolic blood pressure of 90 mm Hg or greater, or a systolic blood pressure of 140 mm Hg or greater.[1][2] The WHO defines grade 1 hypertension as surgery blood pressures ranging from 140 to 159 mm Hg systolic or 90 to 99 mm Hg diastolic, grade 2 hypertension as pressures of 160 to 179 mm Hg systolic or 100 to 109 mm Hg diastolic, and grade 3 hypertension as pressures 180 mm Hg or greater systolic and 110 mm Hg diastolic.[1] Systematic reviews have consistently shown that treating essential hypertension (namely the elevation of systolic and diastolic blood pressures, in isolation or combination, with no secondary underlying cause) with antihypertensive drugs, reduces fatal and non-fatal stroke, cardiac events, and total mortality compared with placebo in those with severe hypertension or high cardiovascular risk owing to age or other co-morbid risk factors.[3][4][5] This review therefore focuses on the effects of treating essential hypertension with different pharmacological agents and also examines the effect of treating hypertension with non-pharmacological agents compared with placebo. **Diagnosis:** It is usually recommended that clinicians diagnose hypertension only after obtaining at least two elevated blood pressure readings at each of at least two separate visits over a period of at least 1 week. [2] This recommendation follows the pattern of blood pressure measurement in the RCTs of antihypertensive treatment, and represents a compromise between reliable detection of elevated blood pressure and clinical practicality.

[All systematically reviewed interventions for Primary prevention of CVD: treating hypertension >>](#)

LATEST GUIDELINES

Hypertension. Clinical management of primary hypertension in adults. [National Clinical Guideline Centre] (01 August 2011)
info@guidelines.gov (NGC)

Synopses

- Synopses of syntheses are ‘comprehensive summaries of all the research evidence related to a focused clinical question’
- Examples include
 - ▶ ACP Journal Club
 - ▶ Evidence-Based Medicine
 - ▶ Evidence-Based Nursing
 - ▶ Evidence-Based Mental Health

ACP Journal Club®
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Therapeutics

The Dietary Approaches to Stop Hypertension diet lowered systolic blood pressure in stage-1 isolated systolic hypertension

ACP Journal Club. 2002 Mar-Apr;136:48.

Moore TJ, Conlin PR, Ard J, Svetkey LP, for the DASH Collaborative Research Group. **DASH (Dietary Approaches to Stop Hypertension) diet is effective treatment for stage 1 isolated systolic hypertension.** Hypertension. 2001 Aug;38:155-8. [[PubMed ID: 11509468](#)] (All 2002 articles were reviewed for relevancy, and abstracts were last revised in 2008.)

Question

In patients with stage-1 isolated systolic hypertension (ISH), does the Dietary Approaches to Stop Hypertension (DASH) diet lower systolic blood pressure (SBP)?

Design

Randomized (unclear allocation concealment*), unblinded,* controlled trial with 8-week follow-up (subgroup analysis of the DASH trial).

Setting

Systematic reviews

- A systematic review is a review of existing knowledge that uses a explicit and scientific methods;
- Contains a clear description of:
 - Research question
 - Inclusion/exclusion criteria
 - Process used to identify studies
 - Methods used to assess quality
 - Methods use to abstract and summarize data
- May or may not combine data quantitatively (meta-analysis)

Examples of groups that do systematic reviews

- The Cochrane Collaboration



- Evidence-based Practice Centers



- Task Force on Community Preventive Services and the Community Guide (CDC)



- Campbell Collaboration





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SPECIAL COLLECTIONS



World day for Safety and Health at Work 2013



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Tuberculosis

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Asbjørn Hróbjartsson, Isabelle Boutron, Lucy Turner, Douglas G Altman & David Moher

[It's time for AllTrials registered and reported](#)



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Cochrane Review Strengths

- Collaborative effort
- Rigorous methodology
- International in scope – including those with questions directly addressed by Caribbean authors now!
- Consumer involvement
- Reviews completed independently of industry funding to avoid perception of bias

Other groups use Cochrane reviews

In developing other reviews:

- CDC - HIV/AIDS Prevention Research Synthesis
- Dept. Health & Human Services/SAMHSA - mental health and substance abuse disorders
- Dept. Education - What Works Clearinghouse
- Dept. Justice – Model Programs Guide

In developing guidelines or policy

- Pan American Health Organization
- Center for Medicare & Medicaid Services
- US Veterans Association
- Blue Cross & Blue Shield Assoc. Technology Evaluation Center
- Professional societies (e.g., American Heart Association)

Studies - could be found using 'clinical queries'

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Assistance of clinical librarians

- RCT of health care providers' ability to locate and use healthcare information
- Presence of a medical librarian (10-12 hours per week) vs usual practice in general internal medicine unit of hospital
 - ▶ Morning intake, clinical rounds, patient list review
 - ▶ Education, immediate and anticipatory searches
- Increase in proportion 'more likely' to use resources to locate information or ask for librarian's assistance after presence
- 80 -90% responded "yes" to "Did literature you obtained .. or that was obtained for you ..ever help you change a treatment plan?"

Conclusions

- Health care providers mostly depend on ‘experts’, with the expectation that ‘experts’ consult evidence based resources to keep current with the literature and evidence
- Evidence can successfully be delivered via electronic systems
- Providers can access various synthesized resources to find the evidence – summaries, synopses, systematic reviews– bypassing the steps in EBM of finding and organizing the evidence