



# How To Teach Evidence Based Practice: An Introduction to the Workshop

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St Joseph's Healthcare, McMaster University



- **Objective**

- To introduce some concepts, activities and tips to help make your week more fruitful, fun and fabulous

- **Methods**

- Self-reflection
  - Purposive field observation
  - Selected literature review
  - Interpretative analysis
  - No peer review

# Disclosures

My comments do not reflect opinions of

- CLARITY Research Group
- St Joseph's Healthcare
- McMaster University
- Canadian Critical Care Trials Group
- Canadian Institutes of Health Research
- Canadian Critical Care Society
- Canadian Medical Association
- Journal of the American Medical Association
- EBM colleagues around the world

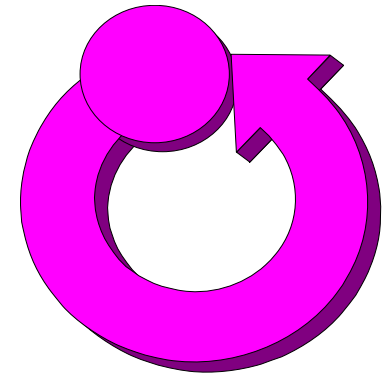
# Selected Issues for Today

- Evolution of the steps
- Questions
- Types of articles
- Applying results to patients
- Group process
- Teaching Tips



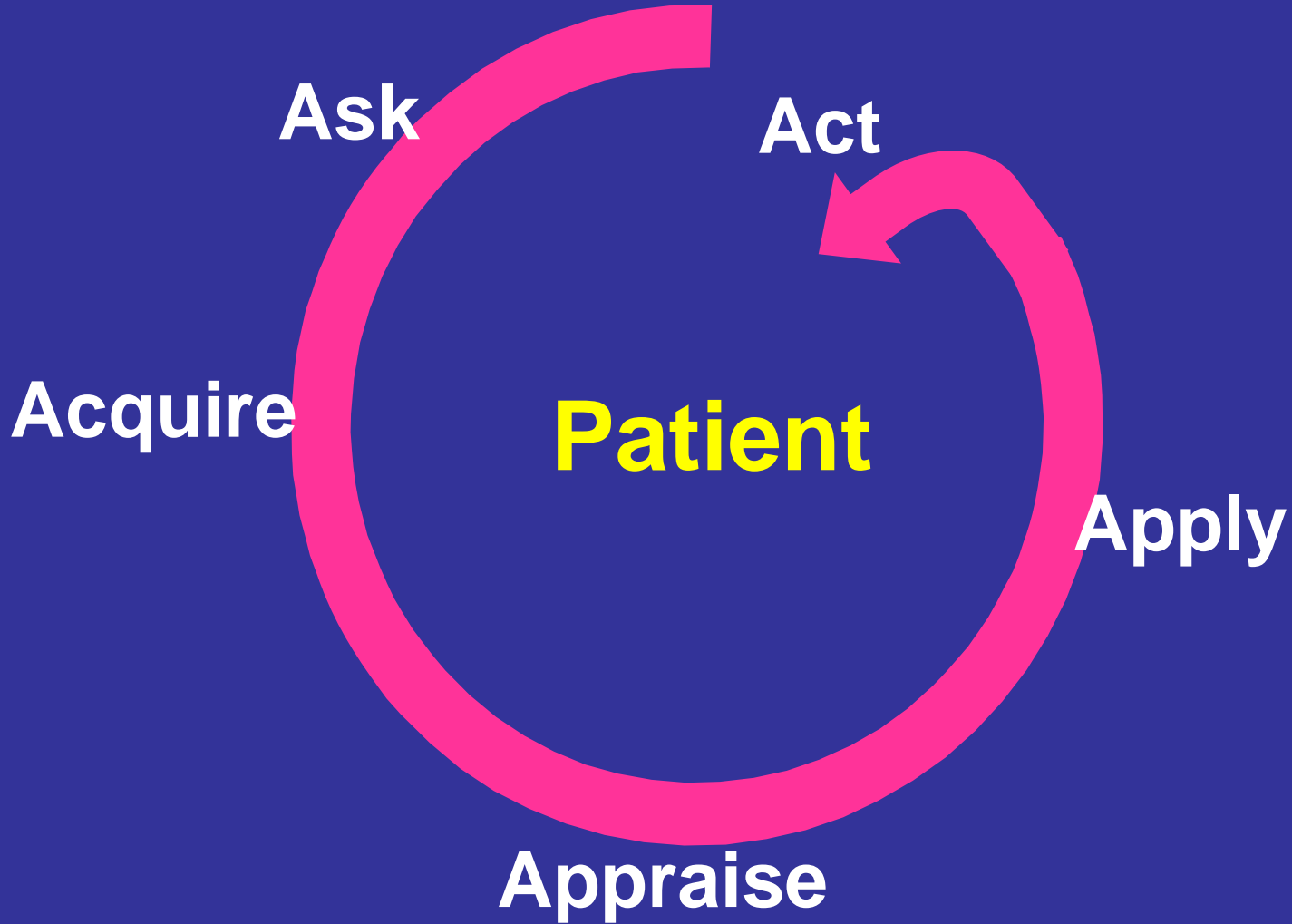
# The (Original) Critical Appraisal Exercise

- define the clinical question
- search for relevant literature

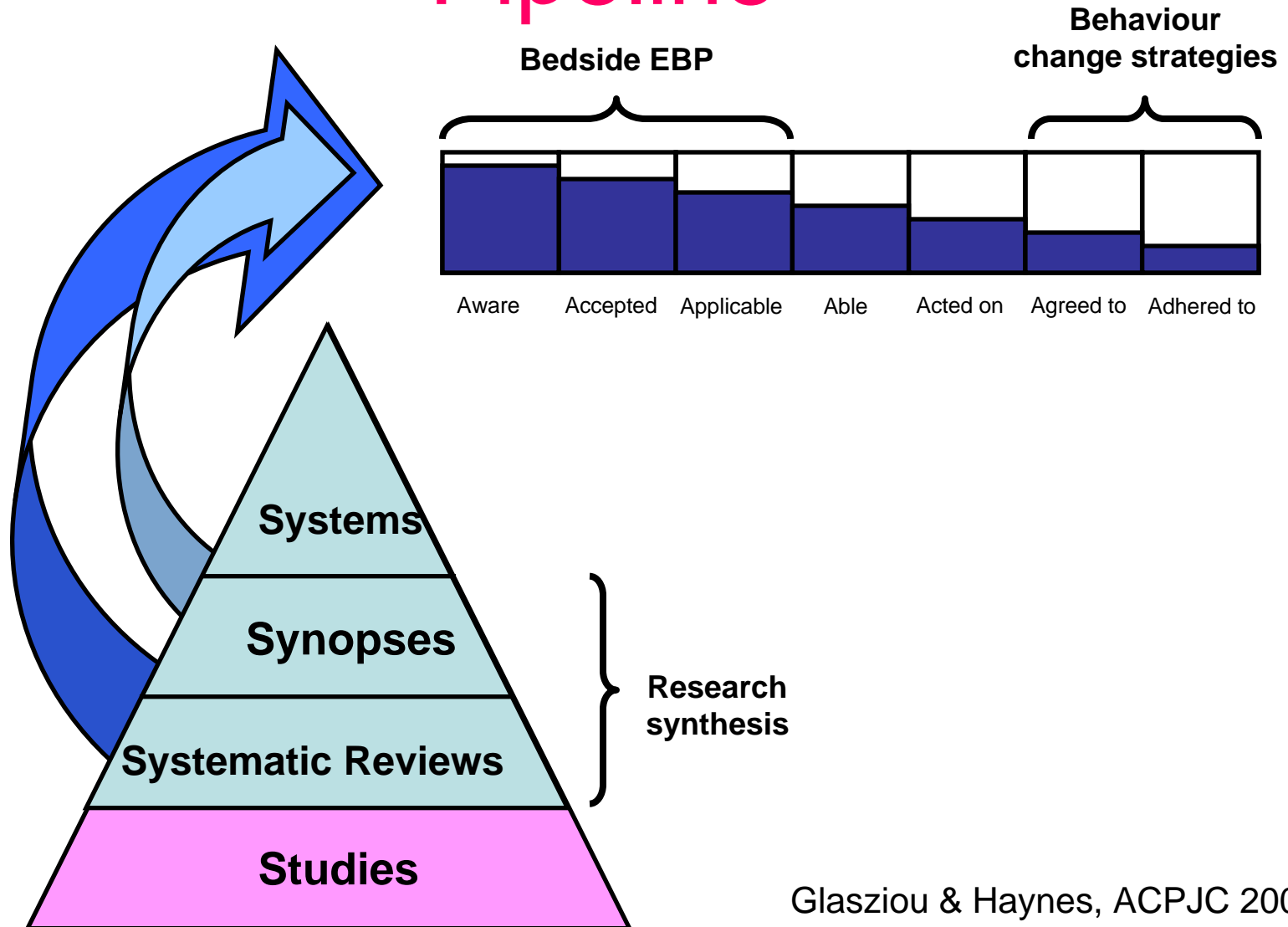


Validity  
Results  
Application

# Evidence Arc



# The Research-to-Practice Pipeline





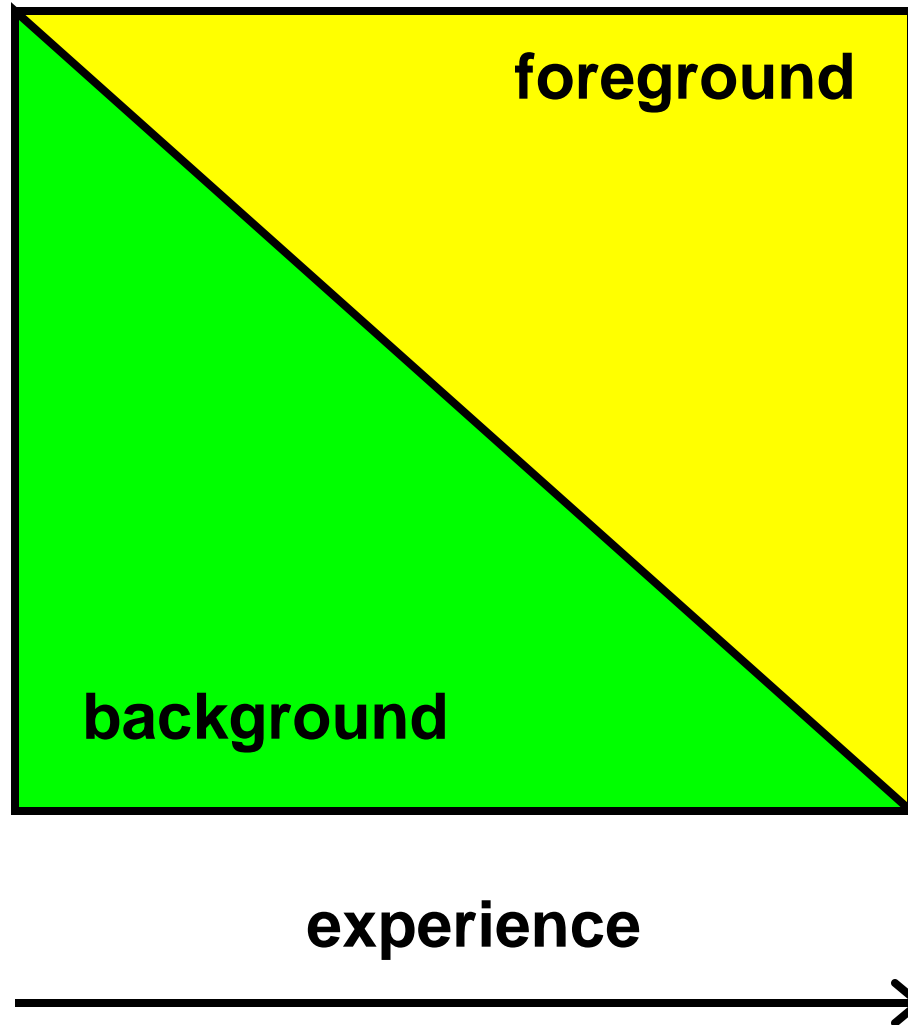
## Question For You

Learning during this workshop..... (true or false)

- a) Is learner driven
- b) Is tutor driven
- c) Small group based
- d) Takes place primarily during individual study time
- e) Takes place primarily during large group sessions



# Formulating Clinical Questions



Richardson et al, ACPJC 2000

# The Foundation of An Answerable Question

**P**opulation  
**I**ntervention (or exposure)  
**C**omparison (if relevant)  
**O**utcome  
(**T**ype of Question)  
(**T**ype of Study)

# Possible Question

- What is the effect of chemotherapy on morbidity in patients with cancer?

# Problems with this Question

- What is the effect of chemotherapy on morbidity in patients with cancer?
- **P:** Hematologic malignancy, solid tumour?
- **I:** Cytotoxic drug, alkylating agent, steroid?
- **C:** Cytotoxic drug, alkylating agent, steroid?
- **O:** Tumour regression, quality of life, mortality?

# Better Question

- What is the effect of Adjuvant A + Drug B vs Drug B alone on health-related quality of life in patients with Cancer X?
- **P:** Cancer X
- **I:** Adjuvant A + Drug B
- **C:** Drug B
- **O:** Health related quality of life?

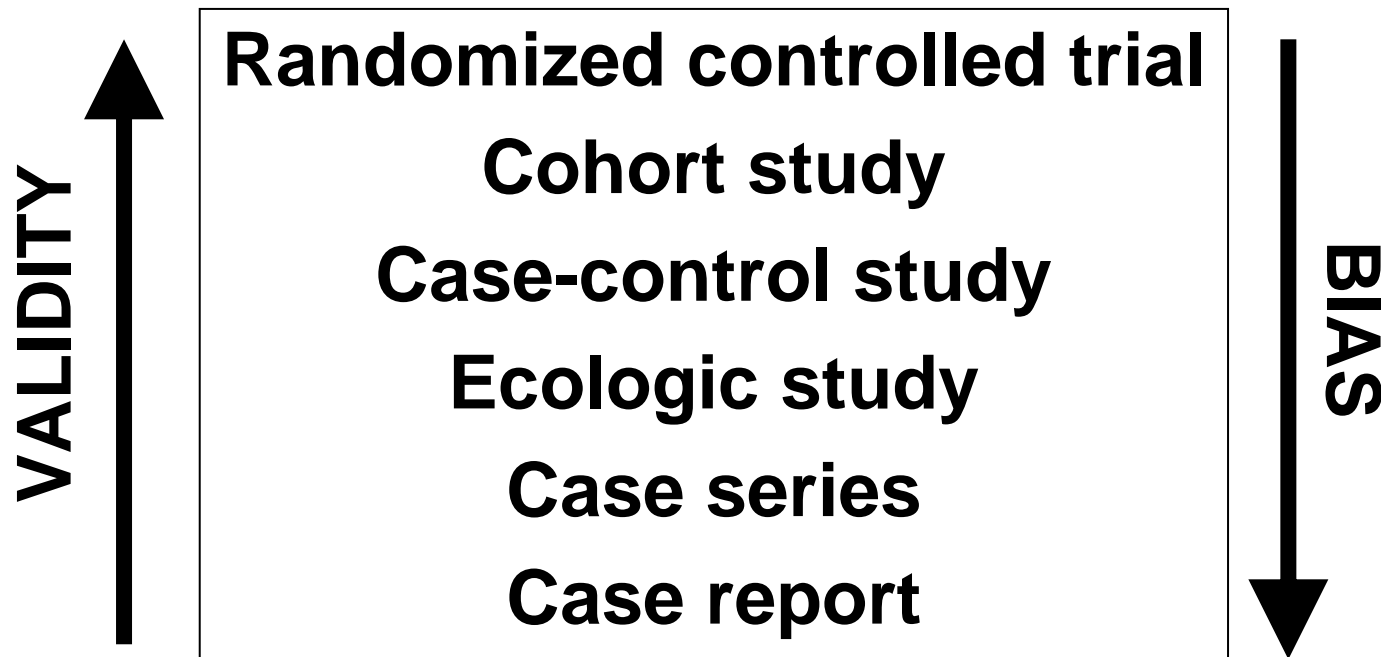


# Question For You

Evidence based teaching is which of the following?.... (multiple choice)

- a) Fun
- b) Challenging
- c) A life long habit
- d) Time consuming (initially)
- e) Time saving (eventually)
- f) All of the above

# Study Designs For Best Evidence on Prevention and Treatment



# We Need Observational Studies To Understand.....

- Mechanisms
- Causation
- Diagnosis
- Prevalence & incidence
- Risk factors
- Predictors of outcome
- Healthcare organization & costs
- Knowledge, attitudes, beliefs, practices



# Integrative Articles

<b>Synthesis</b>	<b>Unsystematic</b>	<b>Systematic</b>
<b>Qualitative</b>	Narrative reviews Many practice guidelines Most consensus conferences	Systematic reviews Evidence-based practice guidelines
<b>Quantitative</b>	Poor meta-analyses	Meta-analyses Economic evaluations Decision analyses

# When Could It Be Sensible to Pool?

- When is it reasonable to expect more or less the same magnitude and direction of effect size across the spectrum of
  - Patients
  - Interventions
  - and Outcomesas specified in the study selection criteria

# Review Articles of Anemia in Critical Illness

- A narrative review addresses many issues:
  - physiology
  - pathophysiology
  - epidemiology
  - diagnosis
  - prognosis
  - prevention
  - treatment

- A systematic review asks a specific question:
  - What is the effect of erythropoietin receptor agonists on patient-important outcomes in critically ill patients with anemia?

# Characterizing Review Articles

<b>Feature</b>	<b>Narrative Review</b>	<b>Systematic Review</b>
<b>Question</b>	general or non-existent	focused
<b>Search</b>	not specified	explicit, comprehensive
<b>Selection</b>	potentially biased	explicit, criterion-based
<b>Appraisal</b>	variable	explicit, rigorous
<b>Synthesis</b>	uncommon	common
<b>Statistics</b>	rarely used	sometimes used
<b>Inferences</b>	rarely evidence-based	usually evidence-based



**This is a meta-analysis**

## Erythropoietin-receptor agonists in critically ill patients: a meta-analysis of randomized controlled trials

Ryan Zarychanski MD, Alexis F. Turgeon MD MSc, Lauralyn McIntyre MD MHSc, Dean A. Fergusson MHA PhD

- **Objective:** to evaluate the effect of erythropoietin stimulating agonists in critically ill patients with respect to clinically important outcomes (mortality, length of ventilation, ICU and hospital stay, transfusions and other adverse events)

## Erythropoietin-receptor agonists in critically ill patients: a meta-analysis of randomized controlled trials

Ryan Zarychanski MD, Alexis F. Turgeon MD MSc, Lauralyn McIntyre MD MHSc, Dean A. Fergusson MHA PhD

- **Question:** what is the effect of erythropoietin stimulating agonists in critically ill patients with respect to clinically important outcomes (mortality, length of ventilation, ICU and hospital stay, transfusions and other adverse events)?

# Erythropoietin-receptor agonists in critically ill patients: a meta-analysis of randomized controlled trials

Ryan Zarychanski MD, Alexis F. Turgeon MD MSc, Lauralyn McIntyre MD MHSc, Dean A. Fergusson MHA PhD

- **Question:** what is the effect of erythropoietin stimulating agonists versus none in critically ill patients with respect to clinically important outcomes (mortality, length of ventilation, ICU and hospital stay, transfusions and other adverse events)?

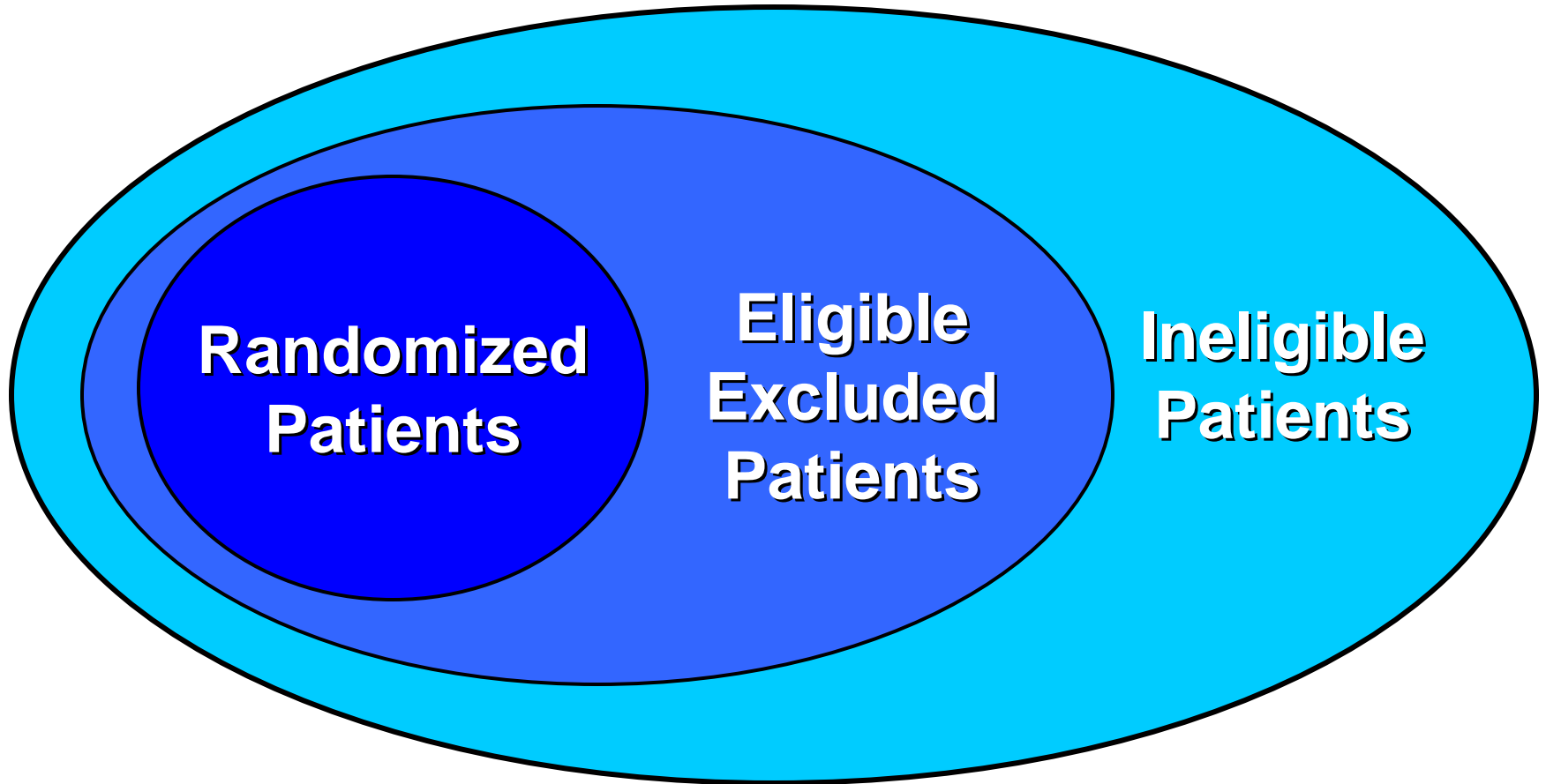
# Statistics Without Pain

- You decide!
- Proportions, confidence intervals, not just p values
- Sensitivity, specificity, likelihood ratios, ROC curves
- Relative measures of benefit & harm (relative risk, relative RR)
- Absolute measures of benefit & harm (absolute RR, NNT)





# Generalizing the Results



# Eligibility Criteria of Randomized Controlled Trials Published in High-Impact General Medical Journals

## A Systematic Sampling Review

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Harriette G. C. Van Spall, MD

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Andrew Toren, MD

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Alex Kiss, PhD

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Robert A. Fowler, MD, MS

**Context** Selective eligibility criteria of randomized controlled trials (RCTs) are vital to trial feasibility and internal validity. However, the exclusion of certain patient populations may lead to impaired generalizability of results.

**Objective** To determine the nature and extent of exclusion criteria among RCTs published in major medical journals and the contribution of exclusion criteria to the representation of certain patient populations.

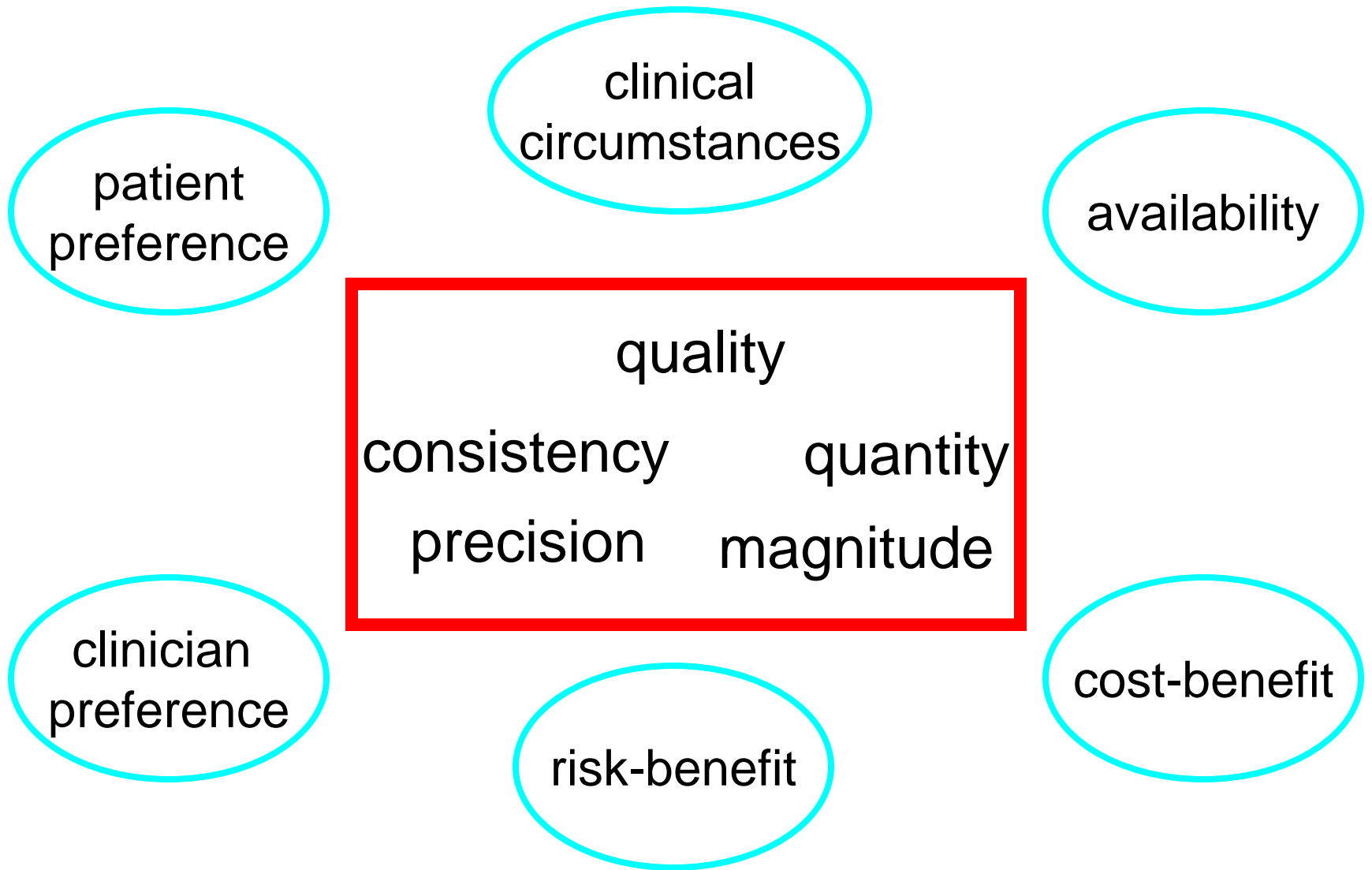
## Exclusion Criteria

47% Strongly justified (e.g., patient may be harmed)

16% Potentially justified (e.g., patient may be noncompliant)

37% Poorly justified (e.g., chronic comorbidity, SES)

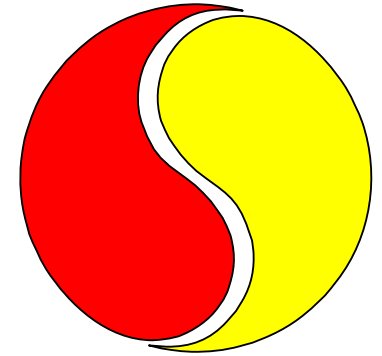
# CONSIDERING EVIDENCE IN PRACTICE



# Balancing Process & Content

Explicitly label

- Process of teaching
- Content of EBM

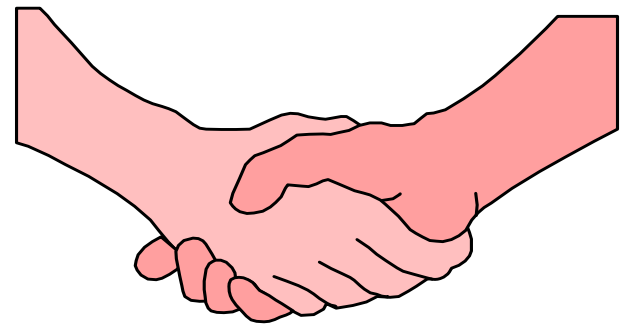


Decide on the best  
balance for your group  
during each session

Escape Outside  
Your Comfort  
Zone

# TEAM

- Together
- Everyone
- Accomplishes
- More



# Set Up Your Teaching Audience: Our Group Last Night

- Pharmacists, nurses,
- Physicians, physicians in training
- Chiropractors
- Patients, families
- Managers
- Lawyers



# How Do We Attend To Language?

- Constructive criticism & suggestions
- Contemporary inclusive language
- Body language
- Use figures & other tools to augment your words
- Explain or eschew jargon





# An Indispensable Skill: Verbal Study Synopsis

## **The Problem:**

- Immediately after critical appraisal teaching sessions, few learners can provide a synopsis.
- Several days after critical appraisal teaching sessions, hardly any learners can do this.
- Some teachers can't do this either.

## **The Solution:**

- Teachers and learners need to practice creating the verbal study synopsis of an article.

# An Indispensable Skill: Verbal Study Synopsis

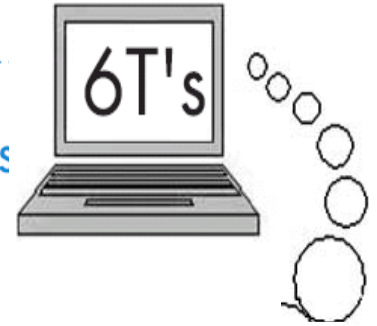
- 1) **context** (patient problem, question)
- 2) **content** (validity, results, application)
- 3) **editorial emphasis** (features, findings)

# Example

- *There's a long standing debate about whether we should use colloids or crystalloids for fluid resuscitation. Recently, a randomized blinded 7,000 patient RCT showed no difference (RR 0.99) in patients resuscitated with albumin versus crystalloid. It is hard to justify using albumin in this situation, given the lack of benefit and higher costs compared to crystalloids.*

# EBM notebook.....

6Ts teaching tips for evidence-based practitioners



- **T**ime management
- **T**eam work
- **T**ools
- **T**riage
- **T**one
- **T**ake home messages

# EBM notebook.....

6Ts teaching tips for evidence-based practitioners

- **T**ime management (for teaching & feedback)
- **T**eam work (engage deliberately)
- **T**ools (board, hand-outs, cards, coins)
- **T**riage (expend items ensuring closure)
- **T**one (safe & respectful)
- **T**ake home messages (always)

# EBM notebook.....

6Ts teaching tips for evidence-based practitioners

## Touchstones

- To plan teaching sessions
- To frame feedback
- To offer organizational structure
- To create norms

# What is 'Mojo' ?

- Firing on all cylinders
- Being 'in the zone'
- The experience of doing something
  - purposeful
  - powerful
  - and positive

# When You Get Home..... Make Time for EB Teaching

- Get rid of busy work
- Drop activities that don't count much, even if you do them magnificently well
- Instead, focus on doing the right things
- Work smarter, not harder
- Network with like-minded colleagues
- Share experiences & tips
- Refresh, retrain, rejuvenate.....





- **Gordon Guyatt**, Professor in Clinical Epidemiology and Biostatistics, has earned a place in the **Institute of Scientific Information's "Citation Hall of Fame"** for clinical medicine this year. This status is accorded to the top 250 most cited researchers in the world in the field.

Please  
Stand Up!



BMJ Life Team Achievement Award

A blue ribbon graphic with a central rectangular section containing text. The ribbon has a 3D effect with rounded ends and a central section that is slightly raised. The text is white and centered within the central section.

**Thank you!  
Enjoy this  
Course!**