

Disclosures:

No grants or consulting fees

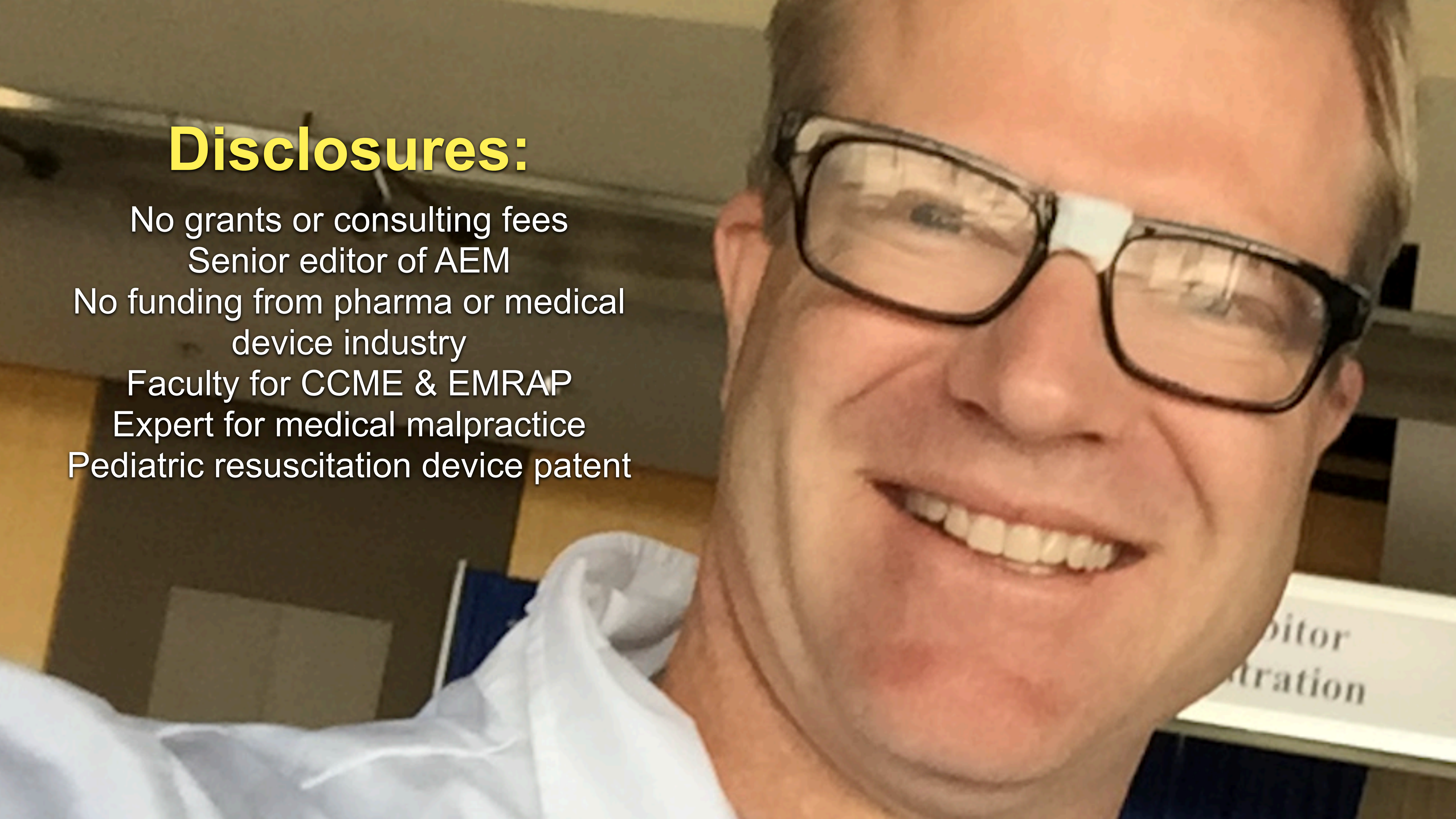
Senior editor of AEM

No funding from pharma or medical
device industry

Faculty for CCME & EMRAP

Expert for medical malpractice

Pediatric resuscitation device patent



EBM Master Class



Remember to be skeptical of anything you learn,
even if you heard it on the Skeptics' Guide to Emergency Medicine.

Objectives:

Burden of Proof/Science


EBM & Critical Appraisal

Biases & Fallacies

Check List RCTs

Live SGEM Podcast



A black and white photograph of Marshall McLuhan. He is a middle-aged man with dark hair, wearing a dark sweater, looking directly at the camera with a slight smile. He is holding a pencil in his right hand, pointing it towards his ear. The background is a wall with several rotary telephones mounted on it. To the left, there is a cluster of three telephones. To the right, there are four individual telephones mounted in a row. A large, light-colored, fan-like object is visible on the wall behind him to the left. In the bottom right corner, there is a stack of papers or a book.

"Anyone who tries to make a distinction between education and entertainment doesn't know the first thing about either."
Marshall McLuhan

Science



Burden of Proof



Science?

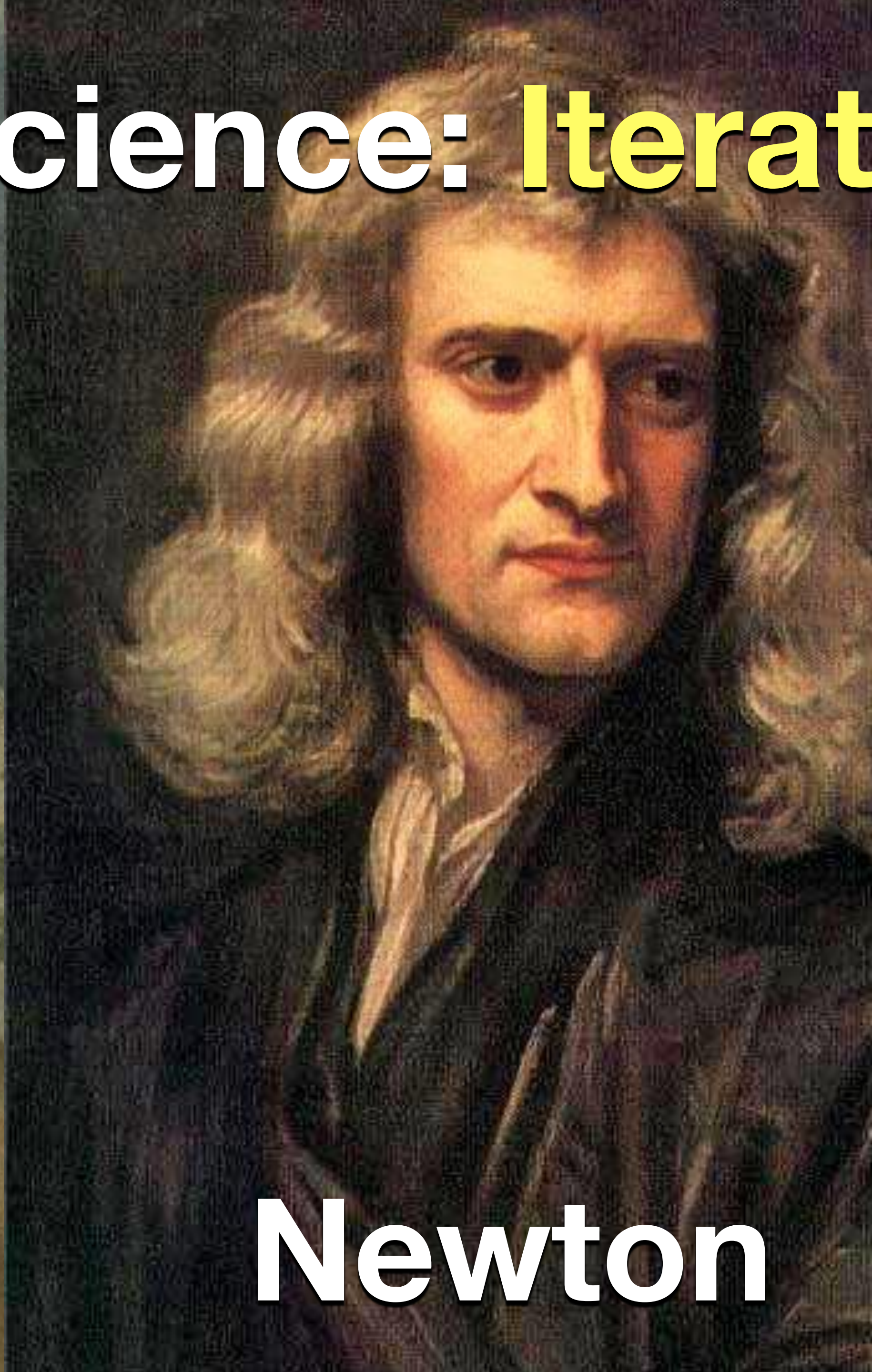


Scientist, Doctor or Both?

Science: Iterative



Orion



Newton



Hooke

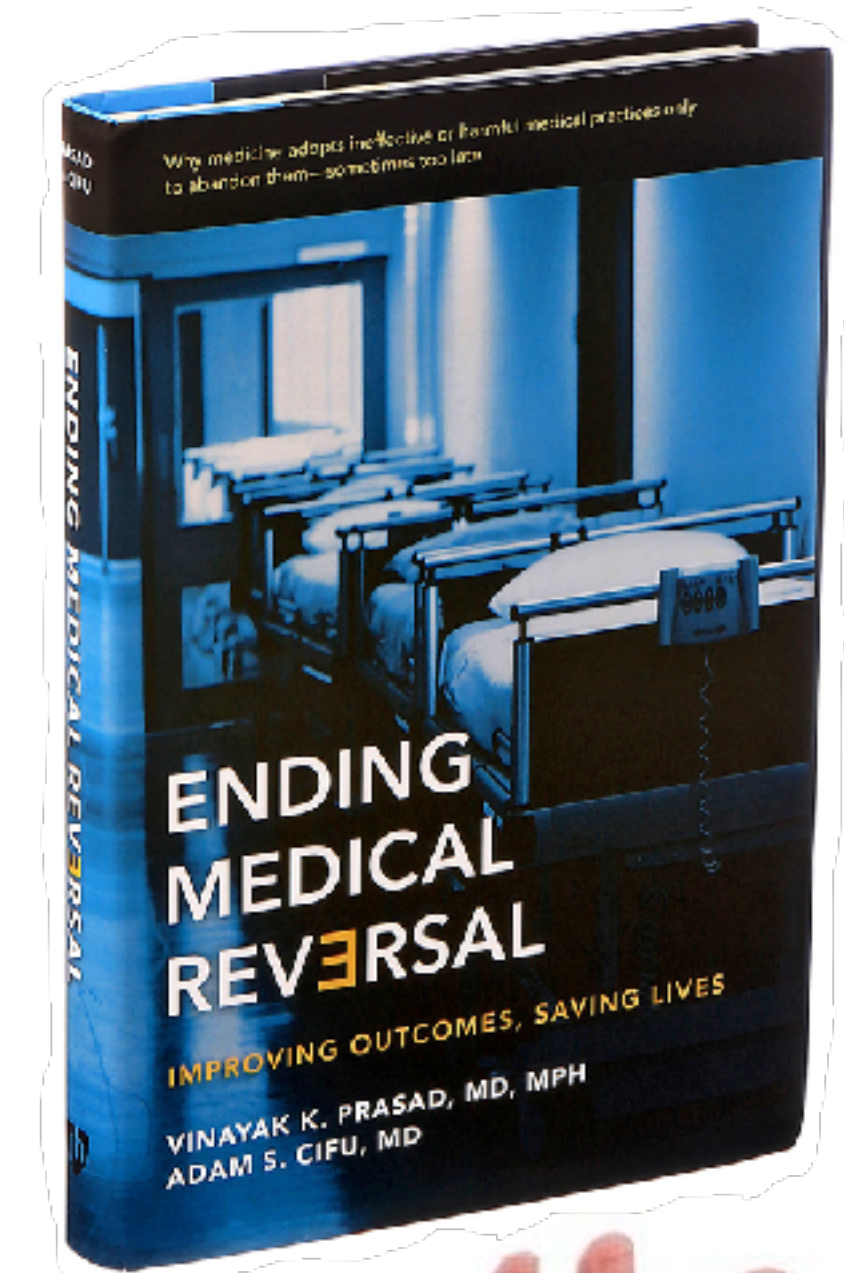


Science: Falsifiable

Wait a second...

If I know the scientists
were wrong, the only
way I know that is
because they were
right later?

So, science
works?



Science:
Self-Correcting

Science: Proportional



Truth



“There is no such thing as the truth, we can only deliver the best available evidence and calculate a probability.”

Blaise Pascal

A glass of orange juice with an orange slice on the rim. The glass is filled with a bright orange liquid, and a slice of orange is perched on the rim. The background is blurred, showing what appears to be an outdoor setting with other people.

**Marik et al
Obs 2016**

**Putzu et al
SRMA 2019**

**Fujii et al
RCT 2020**

**Moskowitz et al
RCT 2020**

Vitamin C & Sepsis?



“Don’t get frightened by not knowing things.

I have approximate answers and possible beliefs and different degrees of certainty about different things but I’m not absolutely sure of anything.”

Richard Feynman

A portrait of David Sackett, an older man with white hair, a full white beard, and glasses. He is wearing a dark suit jacket over a white shirt. The background is a textured, brownish-grey.

EBM

Conscientious

Explicit

Judicious

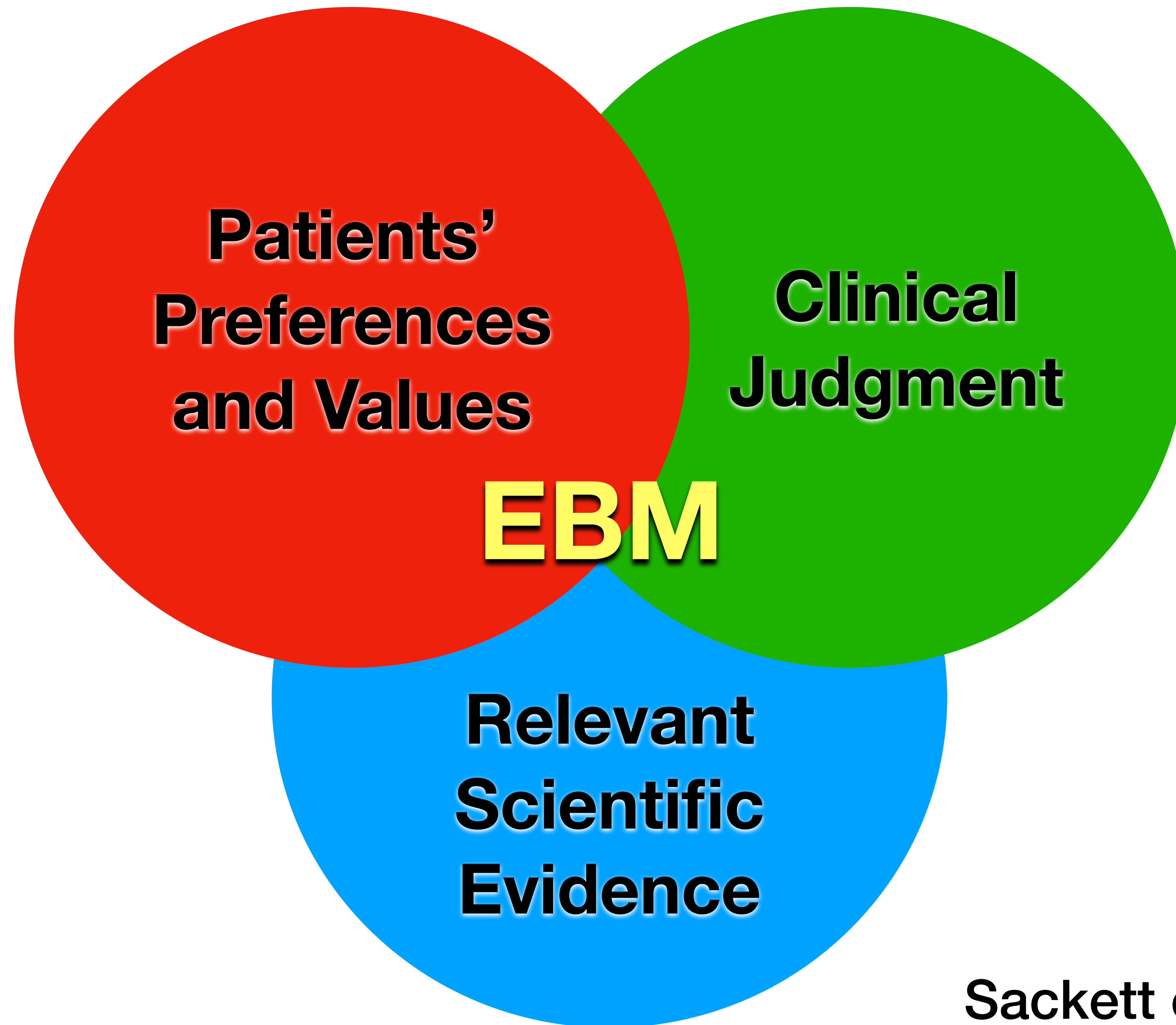
Best Evidence

Shared Decisions

Care

Individual Patients

David Sackett



Sackett et al BMJ 1996



Sackett et al BMJ 1996

Levels of Evidence

n=1

Systematic Review

Appraised Topics

Appraised Article

RCT

Cohort Study

Case Report

Expert Opinion



Systematic Review Meta Analysis



GIGO (Garbage In - Garbage Out)

Parachute Trial

Smith & Pell BMJ Dec 2003



Hayes et al.

CMAJ Jan 2018



Parachute Trial

Yeh et al Dec 2018

Five Alternatives to EBM

Adapted from Isaacs and Fitzgerald: BMJ December 1999

1. EmBM



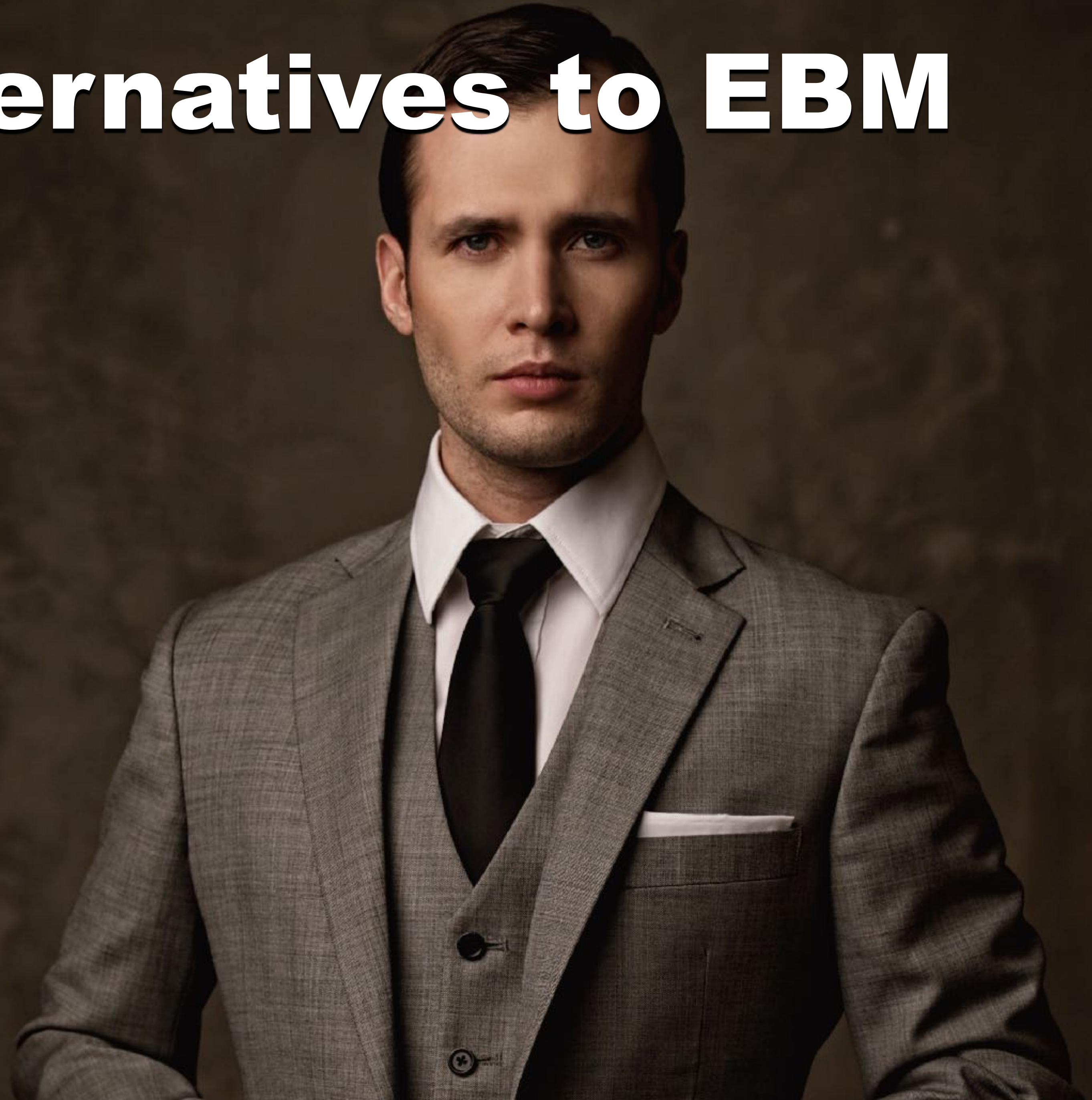
Five Alternatives to EBM

2. VBM



Five Alternatives to EBM

3. EIBM



Five Alternatives to EBM



4. NBM

Five Alternatives to EBM

5. CBM*

* **Restricted to surgeons**



EBM is the Worst...

"Democracy is the worst form of government except all the others that have been tried."

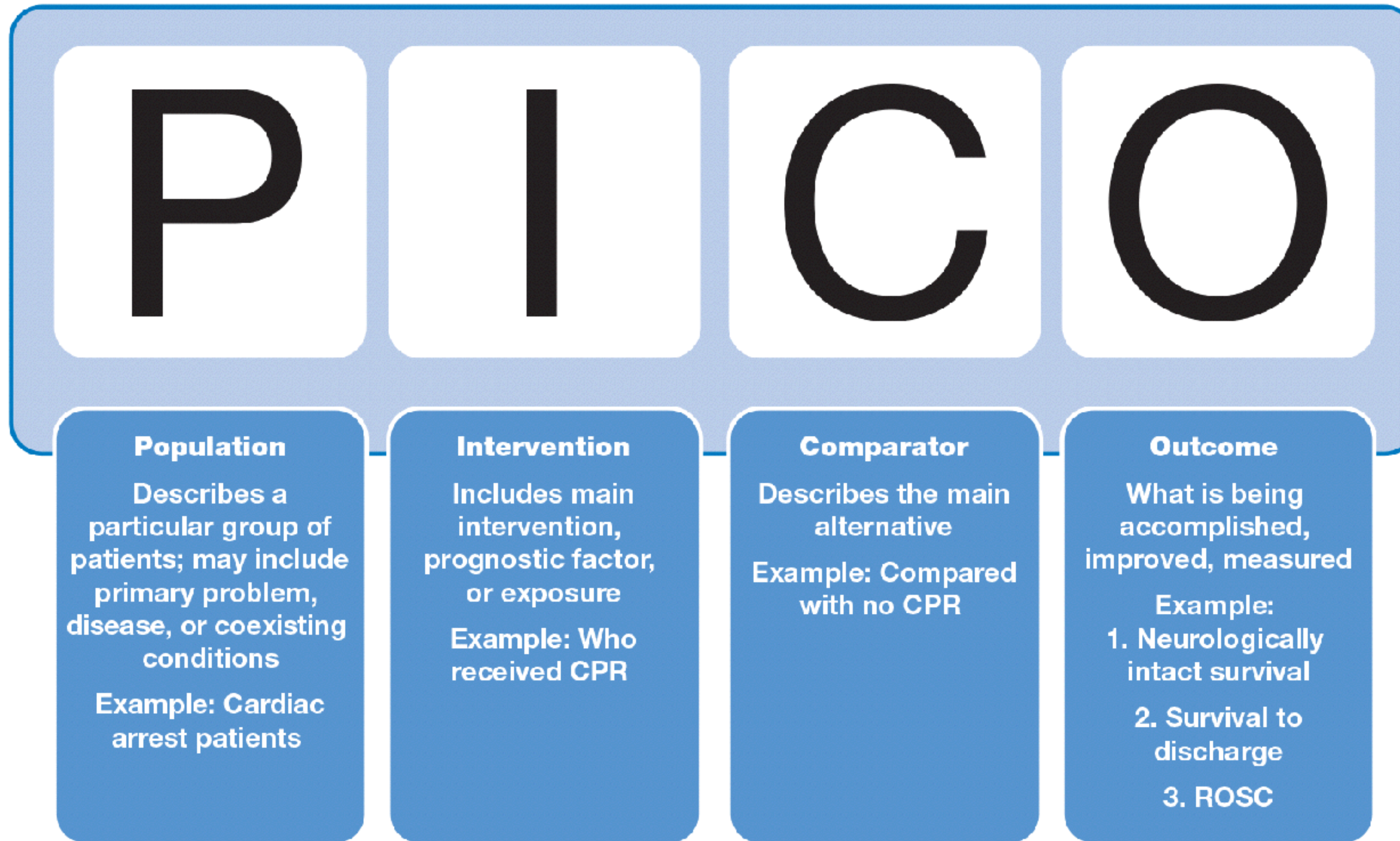
Sir Winston Churchill



5 Step of Critical Appraisal



Step 1: PICO



Step 1: Population



Step 1: Intervention



Step 1: Control

placebo

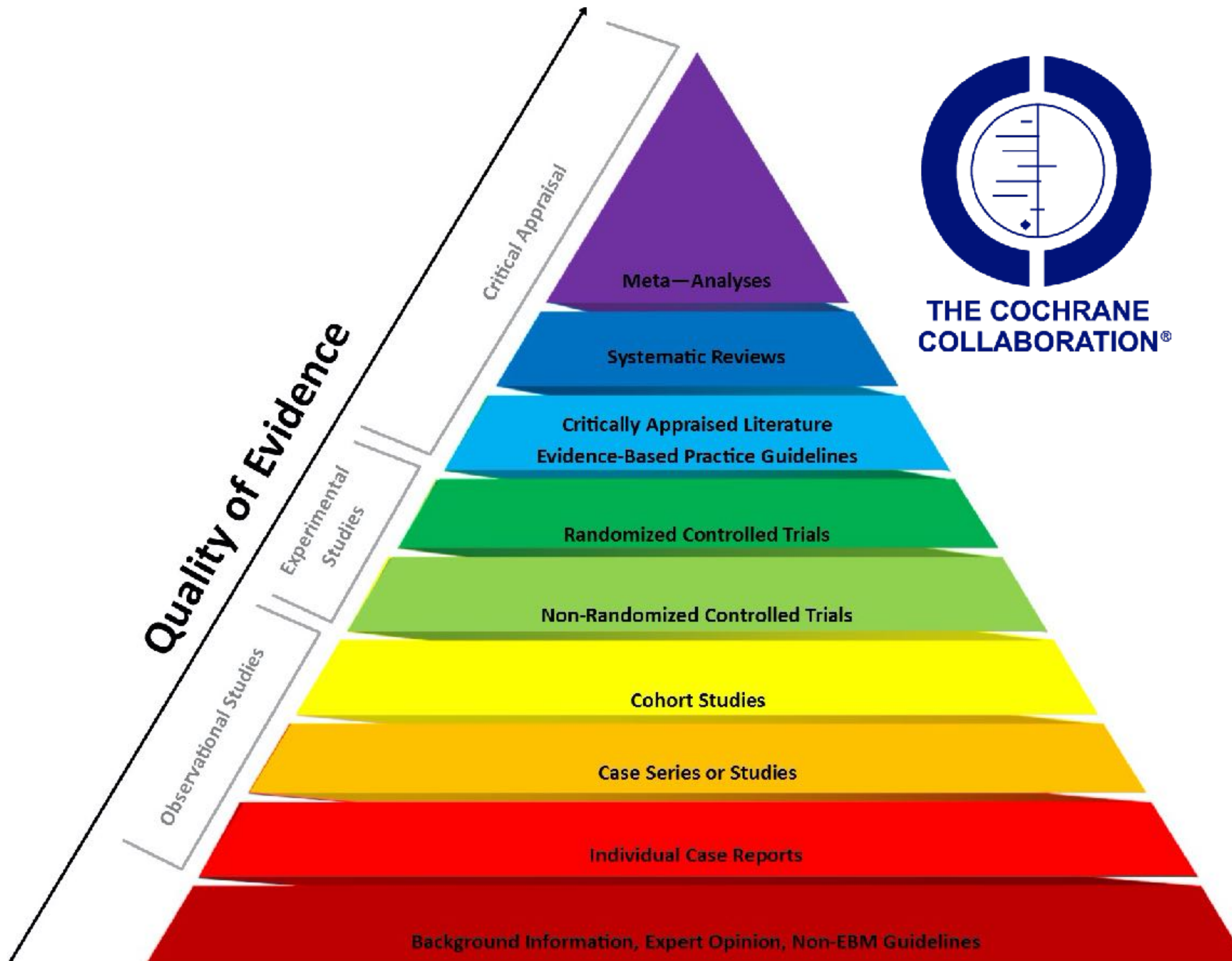
Step 1:
Outcomes
(DOOs, LOOs,
MOOs or **POOs**)



Step 2: Search Strategy



Step 3: Least Biased



Step 4: Critically Appraise

Checklist



Step 5: Practice Changing?



NNT & NNH

BIAS!

?

?

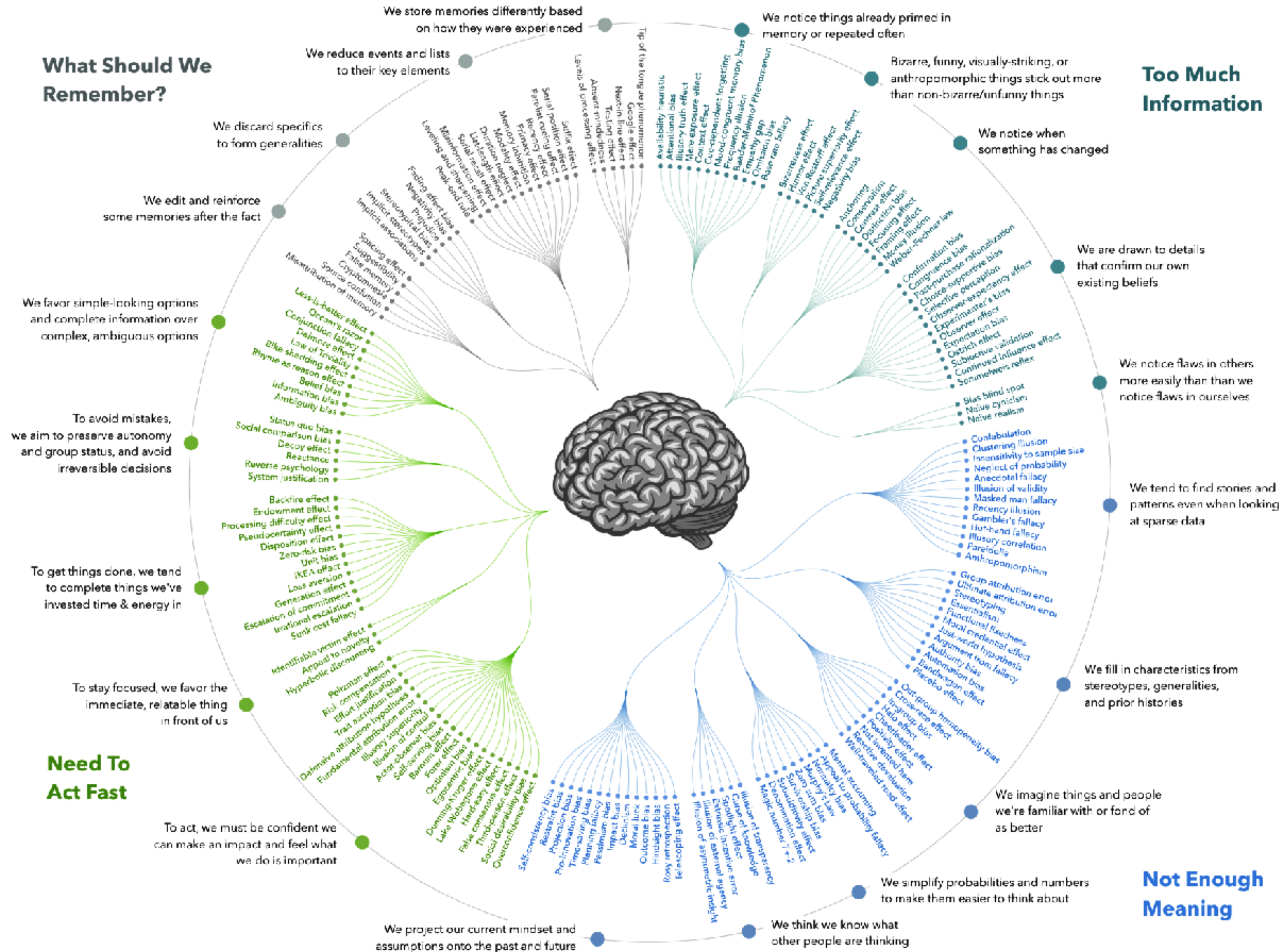


STAR WARS



Pineapple on Pizza?

COGNITIVE BIAS CODEX



A man with dark hair and glasses is shown from the chest up, looking slightly to the right with a thoughtful expression. He is wearing a light blue shirt and a patterned jacket. The background is a dark chalkboard with faint, handwritten text in white chalk. The text on the chalkboard includes "sc", "om", "cy", "po", "fer", and "s".

**What is one
of your
biases?**