Teaching Evidence-Based Health Care: What, Why, and How

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Conflicts, etc.

- I have no financial ties with industry that pose a conflict of interest regarding the content of this presentation
- I will not be discussing “off label” uses of any medications or devices
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Today's Aims

- EBM, EBP, EBHC: what, why bother
- Consider how to teach EBHC
- Consider how to map to curriculum

Show of Hands …

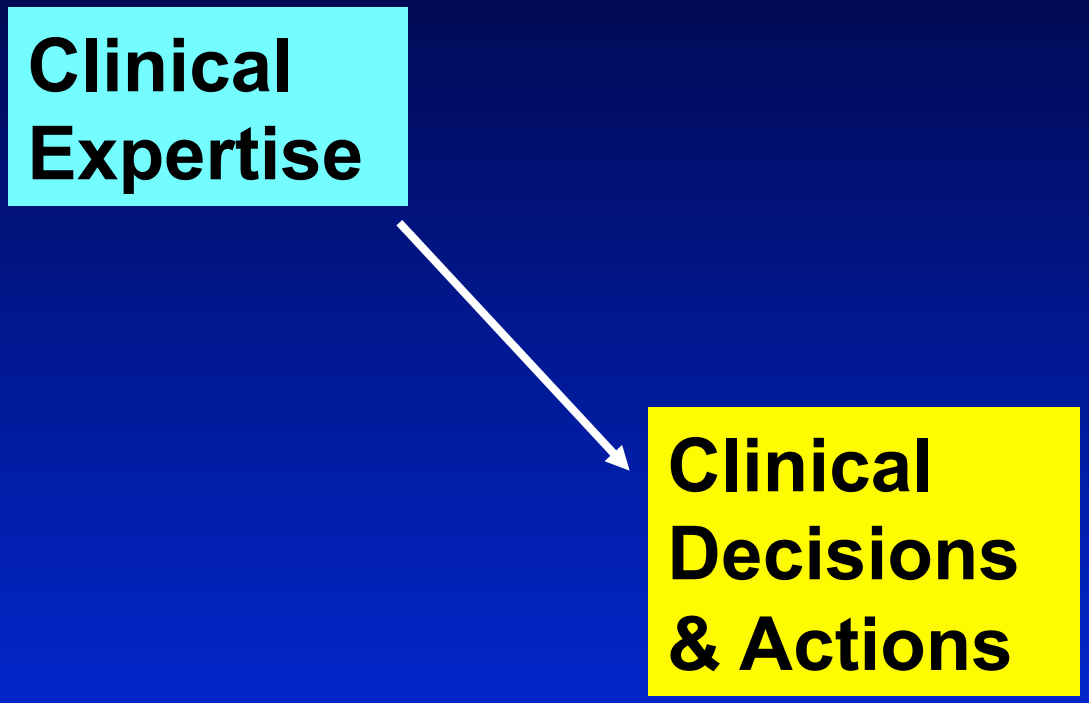
Knowing what you know now, would you want your health system to routinely provide polyvalent pneumococcal vaccine (Pneumovax®) to 'high risk' and elderly persons to prevent pneumococcal pneumonia and pneumonia-related death?

What should we teach novice clinicians about how and how well it works?

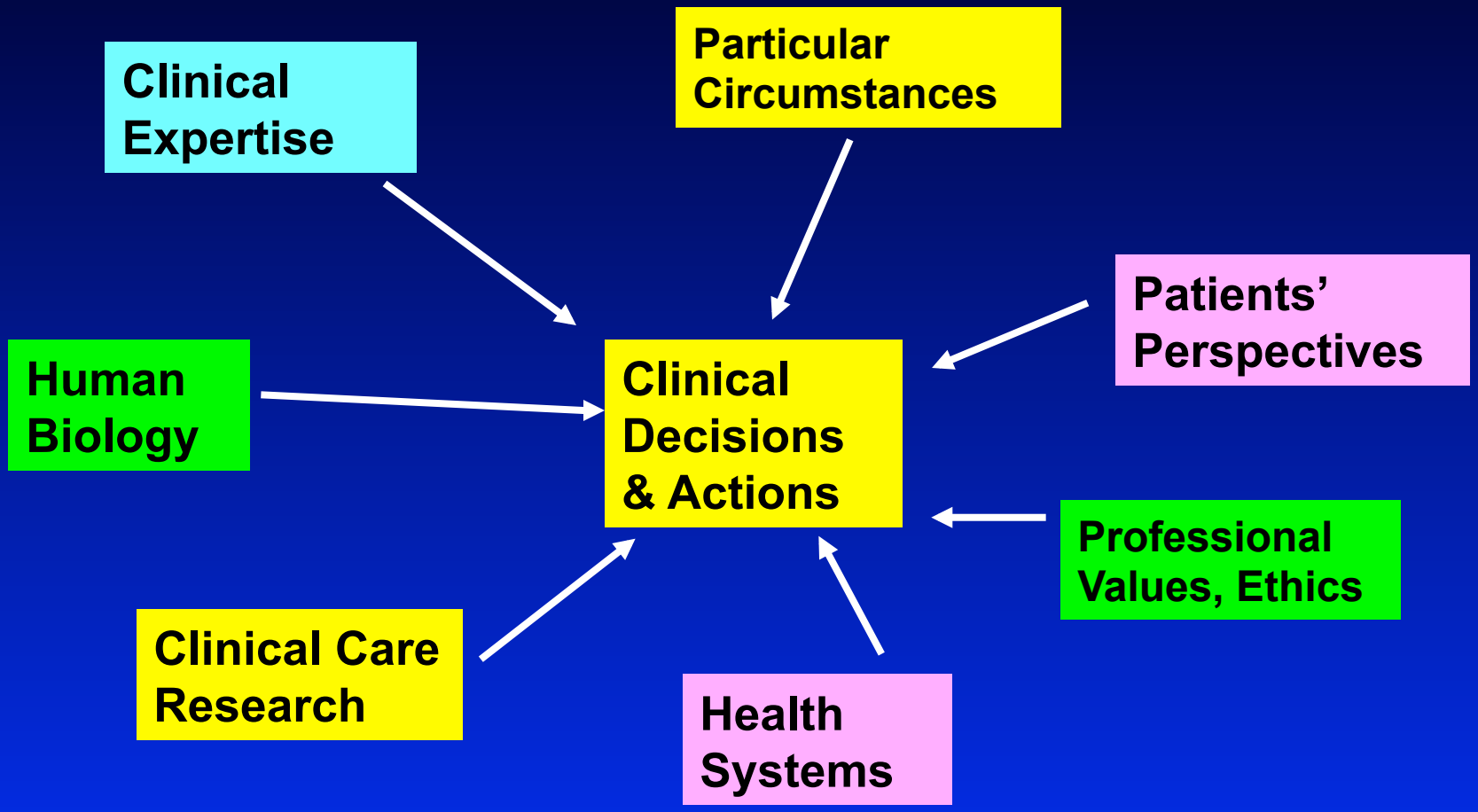
What is Evidence-Based …

- Conscientious, explicit and judicious use of the current best evidence from clinical care research in …
- **Practice**: … the care of persons
- **Healthcare**: … the care of peoples
- **Education**: … learning & teaching

Knowledge for Clinical Decisions

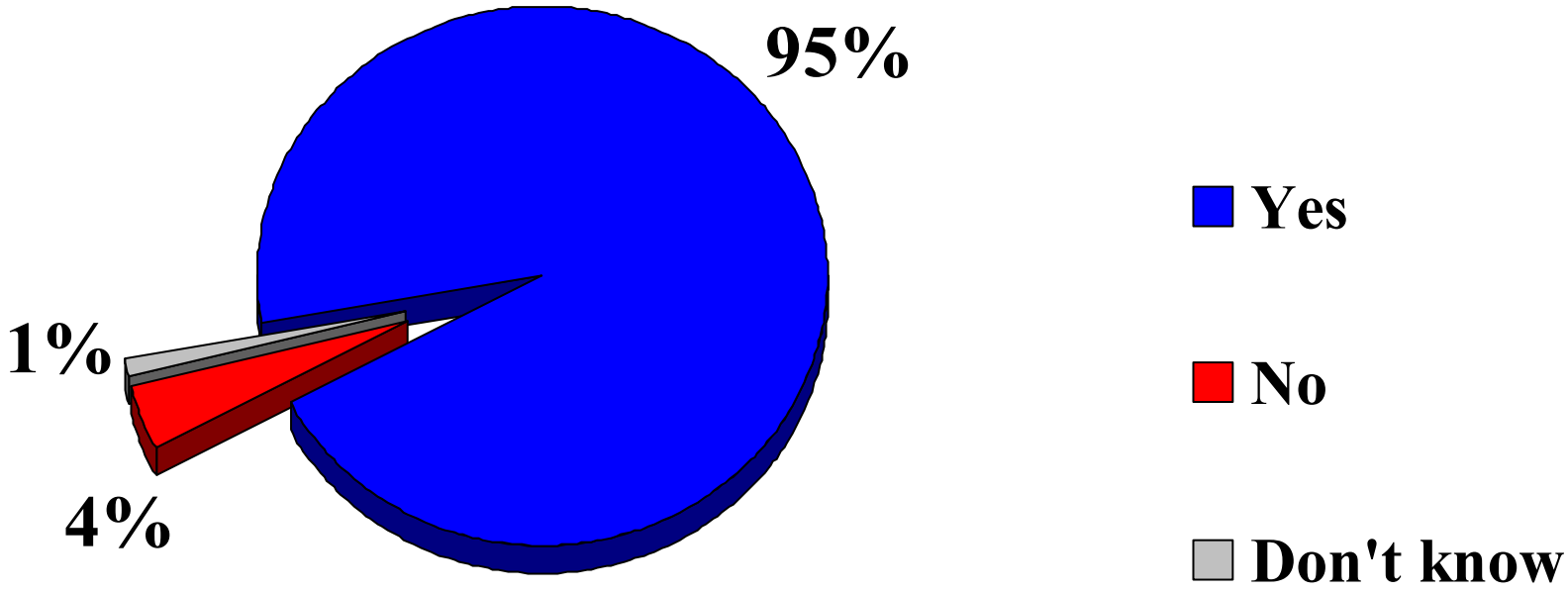


Knowledge for Clinical Decisions



Americans Believe Health Care *Should Be* Based On Best Research

Do you believe that the health care services you receive *should be* based on the best and most recent research available?



Source: National Survey, 2005
Charlton Research Company for Research!America

Research!America
AN ALLIANCE FOR DISCOVERIES IN HEALTH®

Why EBHC? (a)

- Much clinical care research published
- Changed over 60 y
- Only tiny fraction valid, important, & applicable to care
- Need it frequently
- 'Usual' sources of it don't work well …

‘Usual Sources’ Work Poorly (a)

- Overwhelming in number and scope (biomedical publications)
- Ineffective (traditional CME)

Why EBHC? (b)

- With time, as our unanswered ???'s accumulate, our ignorance of current best care grows, and our clinical competence begins to shrivel, turning us into …
- And, too little time

Clinical Experience vs. Quality of Care

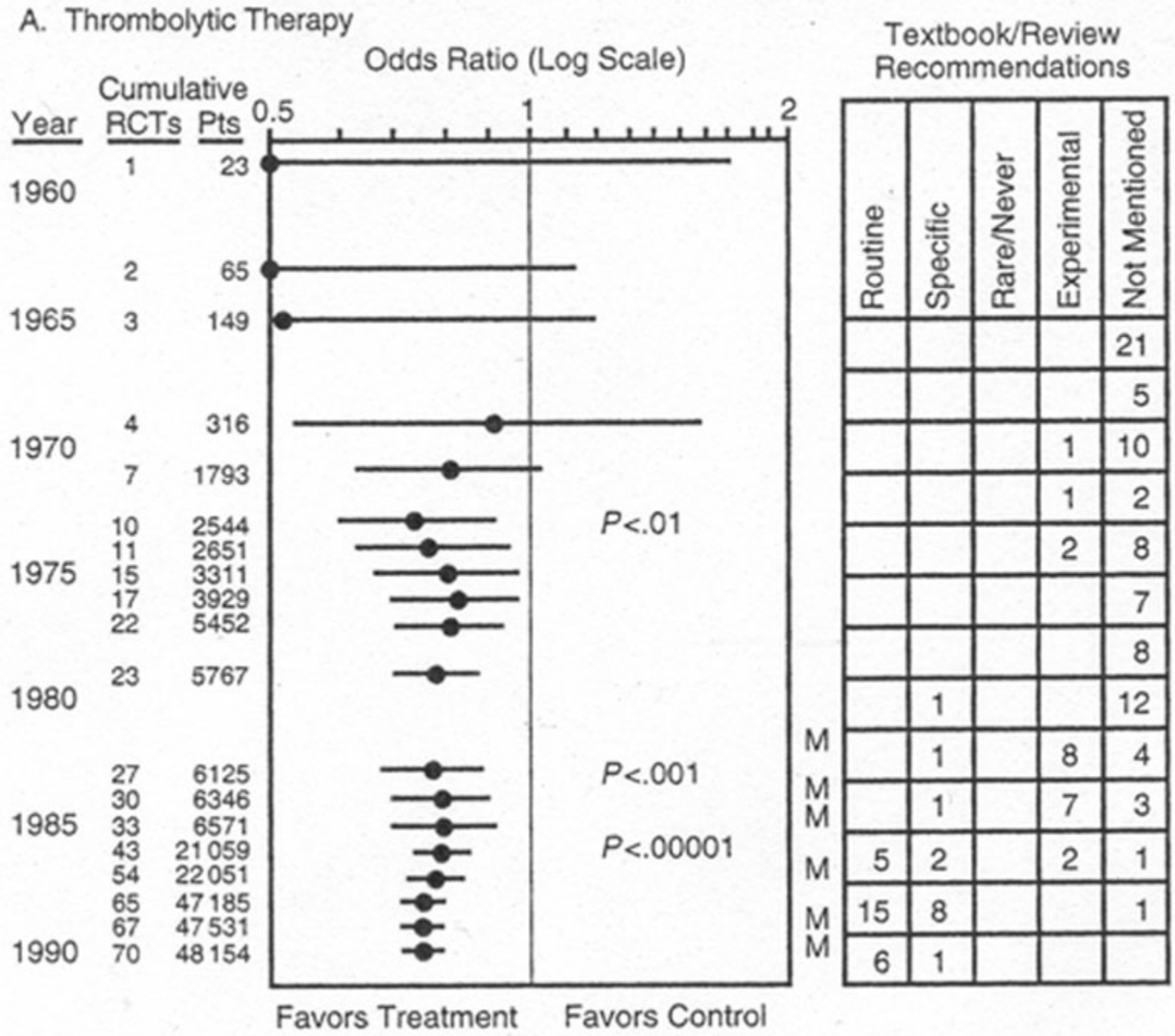
- Systematic review, 62 evaluations
  - 12 'Knowledge' – negative association between experience & knowledge: 12
  - 24 'Diagnosis, Screening, Prevention' – negative association: 15 of 24
  - 19 'Therapy' – negative association: 14
  - 7 'Outcomes' – negative association: 4
- *Choudhry Ann Int Med 2005; 142: 260*

Accompanying Editorial

- "We cannot maintain competence passively through accumulating experience. We must actively cultivate competence throughout a professional career."
- "We can still customize care to each patient's needs – evidence-based standards are best starting point for flexible, patient-centered approaches."

‘Usual Sources’ Work Poorly (b)

- Out of date (textbooks)
- Often wrong (experts)


A. Thrombolytic Therapy
Odds Ratio (Log Scale)
0.5
1
2
Year
Cumulative RCTs
Pts
1960
1965
1970
1975
1980
1985
1990
1 23
2 65
3 149
4 316
7 1793
10 2544
11 2651
15 3311
17 3929
22 5452
23 5767
27 6125
30 6346
33 6571
43 21 059
54 22 051
65 47 185
67 47 531
70 48 154
P<.01
P<.001
P<.00001
Favors Treatment
Favors Control
Textbook/Review Recommendations
Routine
Specific
Rare/Never
Experimental
Not Mentioned
21
5
1 10
1 2
2 8
7
8
1 12
M 1 8 4
M M 1 7 3
M 5 2 2 1
M 15 8 1
M M 6 1

Pneumovax: Why Do It?

- Early studies (observational) showed use associated with lower infections
- Biologic plausibility
- Surrogate outcomes
- Analogies (polio, small pox, flu)
- Cherished beliefs
- Low unit costs (vs. aggregate cost)
- Measurable
- Experts say to do it
- Practice guidelines
- Manufacturers
- CDCP
- JCAHO

Pneumovax: Evidence?

- 3 Trials in healthy ‘low risk’ persons
  - N ~ 21, 000; (high attack rates)
  - Reduces pneumonia, death, bacteremia
- 10 Trials in older & ‘high risk’ persons
  - N ~ 24, 000, developed & developing
  - No reduction in poor clinical outcomes
- 3 Systematic Reviews of these trials
  - No RCT evidence Pneumovax is effective in elderly or ‘high risk’ patients

How could experts be wrong?

- Asked to opine early
- Strong opinions
- Cognitive overload: little time, much info
- Involved in research so not without bias
- Conflicts of interest
- Other human frailties, e.g. ego

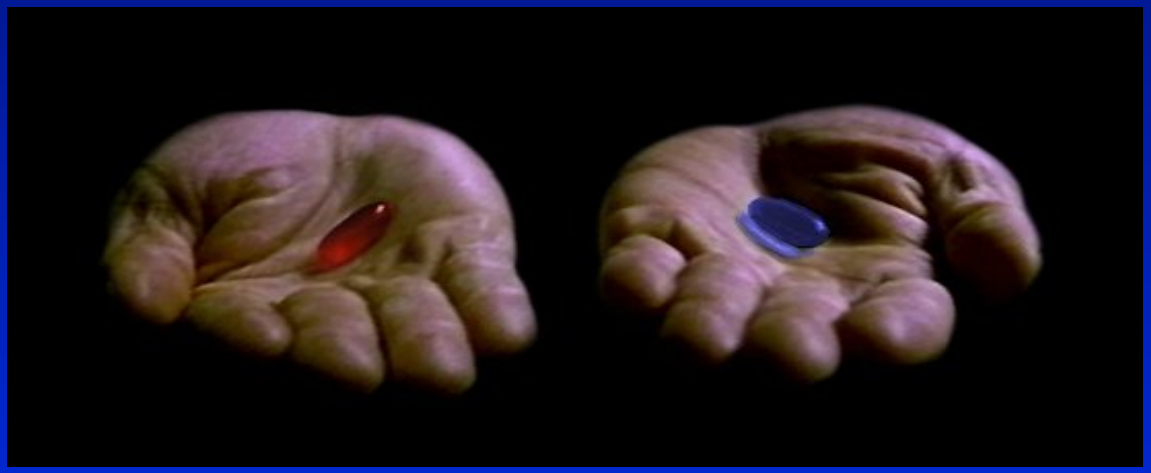
- Confuse preliminary evidence ("it should work") with definitive evidence ("it does work, and it's worth doing")
- Focus on how, not how well, it works
- Don't use explicit, systematic methods to review evidence

Use of E-b Rx vs. Outcomes?

- Systematic Review, 34 studies, CV diseases
- Death rates are lower among patients who receive evidence-based treatments at optimal doses, compared with patients who are not given these treatments or who do not take these drugs at target levels.
- Decrease in observed mortality is proportional to the number of appropriate therapies received (of all possible indicated).
- *Mehta et al Am J Med 2007; 120: 398 – 402.*

EBHC: Back to Why

- We can't make well-informed decisions without information
- Not all information is created equal
- Misinformation can be worse than no information
- Better information → better informed decisions → better outcomes



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- Consider how to teach EBHC
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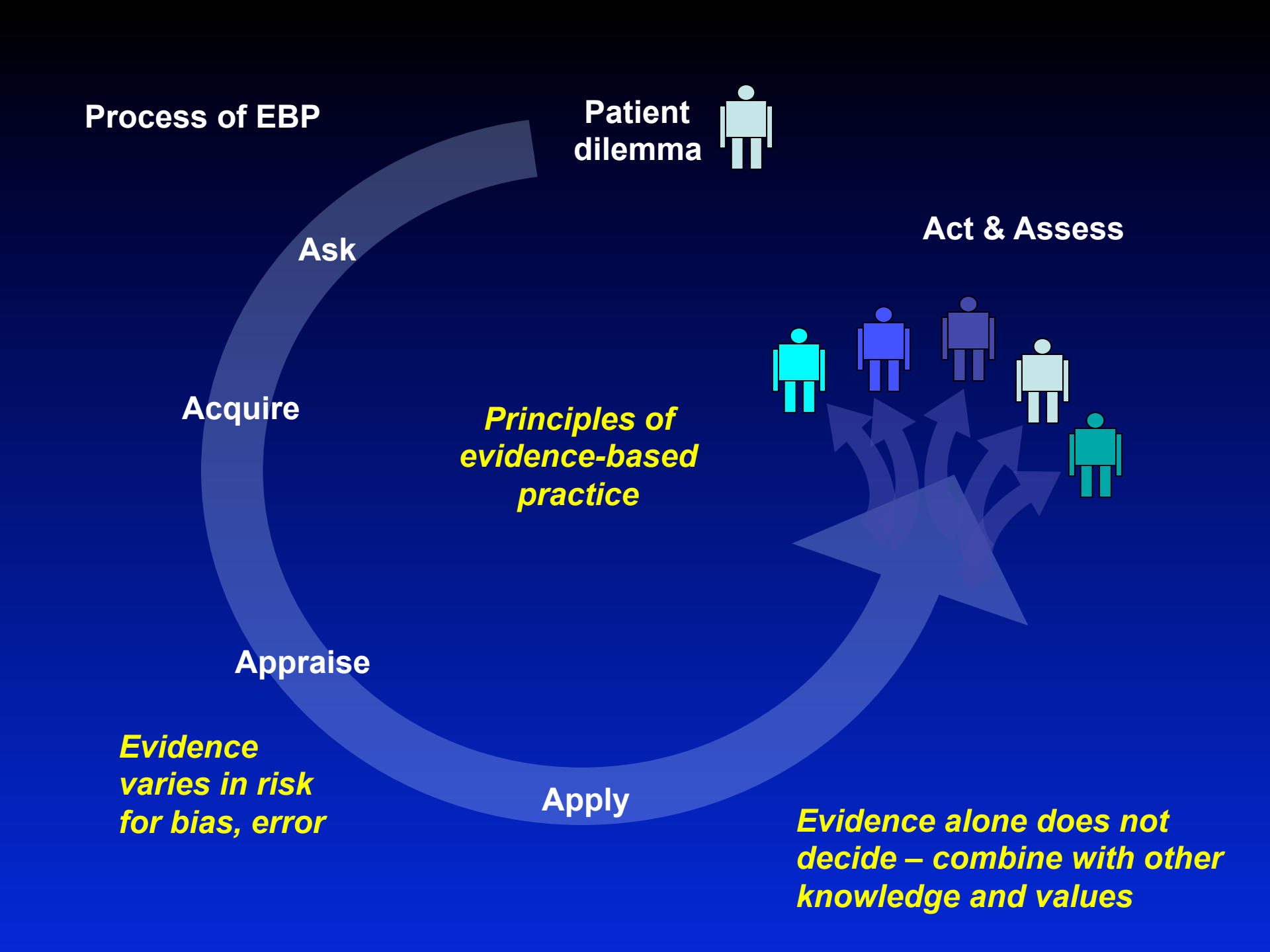

Process of EBP
Patient dilemma
Ask
Act & Assess
Acquire
Principles of evidence-based practice
Appraise
Evidence varies in risk for bias, error
Apply
Evidence alone does not decide – combine with other knowledge and values

Getting Started

- Learn basic skills, e.g. course, books
- Access evidence resources
- Practice, practice, practice
- Build allies

- Teach in 3 modes

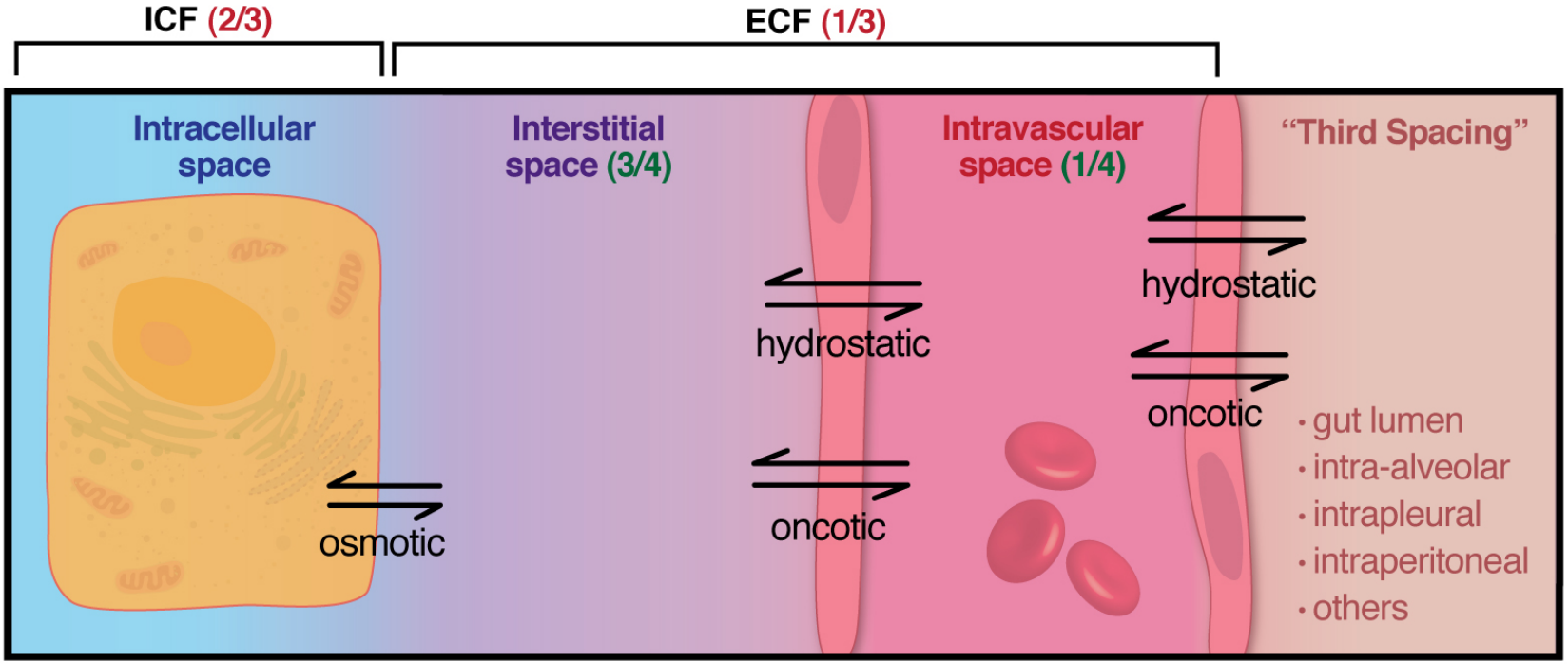
1 Role Modeling

- Practice EBP, and be seen to do so
- Learners see use of evidence as part of good patient care
- Also see who, what, when, where, & how
- Teach by doing, learn by doing

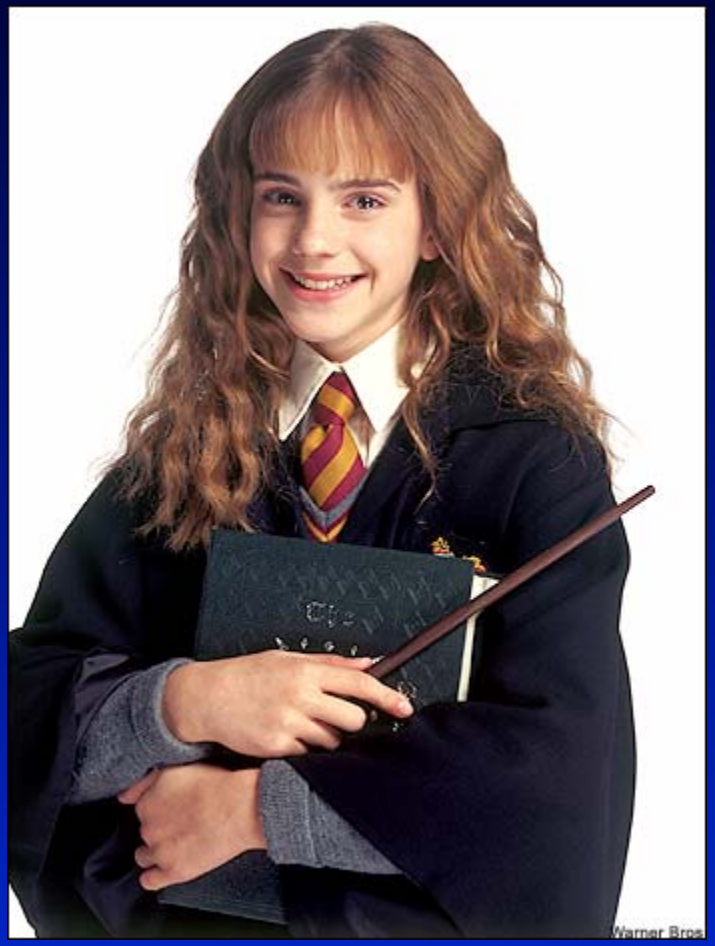
2 Weaving

- Add evidence to mix of knowledge taught for clinical topics
- Learners see using evidence as part of good clinical learning
- Make decisions and judgments explicit
- Teach ‘vinaigrettes’

Fluid Movement



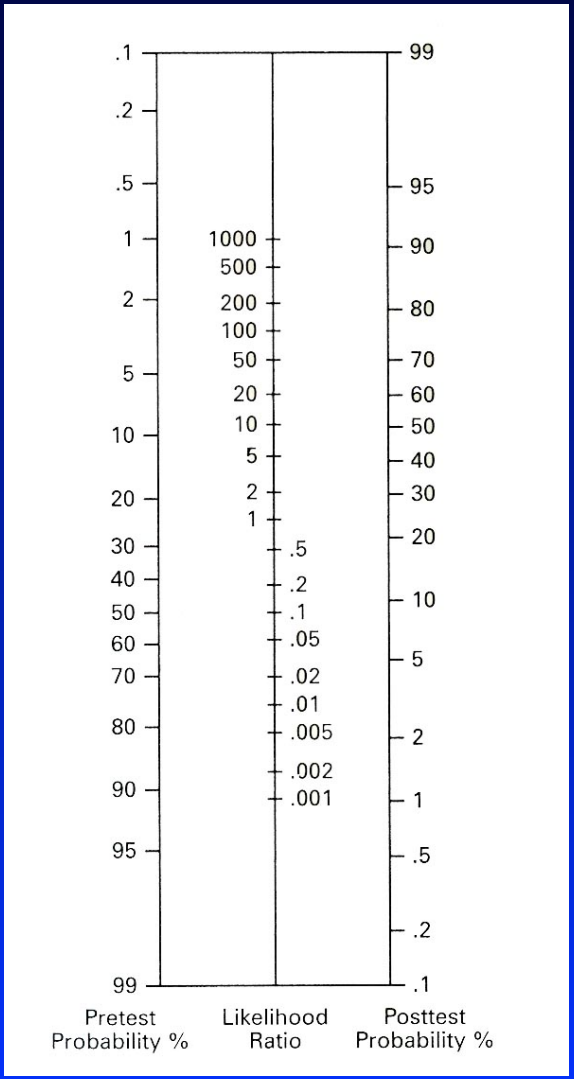
3 Targeting



- Target specific EBP skills to coach e.g. asking questions
- Learners build skills to learn this way
- Focus on learning needs
- From ‘one slice’ to ‘whole pie’

Likelihood Ratio Nomogram

- On left side, select pretest probability
- Draw straight line through center at LR
- Continue straight line to right side, read off posttest probability



Teach EBM: 10 Successes

- Real decisions
- Actual L needs
- Active + Passive
- ‘New’ to ‘old’
- Involves everyone
- Attends to all 4:
  - Affective, Cognitive
  - Conative, Motor
- Matches & exploits particular situation
- Prepared + Opportunistic
- Explicit judgments
- Builds skills for lifelong learning, e.g. multi-staged

Teach EBM: 10 Failures

- Do > use research
- Do > use statistics
- Only flaws
- Substitute, not add
- Disconnected from learning needs
- Teach > time
- Teach too fast
- Full closure/session
- Humiliates learners for not yet knowing
- Bullies learners to decide act based on authority, power rather than evidence & rational argument

Putting it together ...

- Mix 3 modes to fit teaching context
  - ‘Role model’
  - ‘Weave’
  - ‘Target’
- Maximize successes
- Avoid failures

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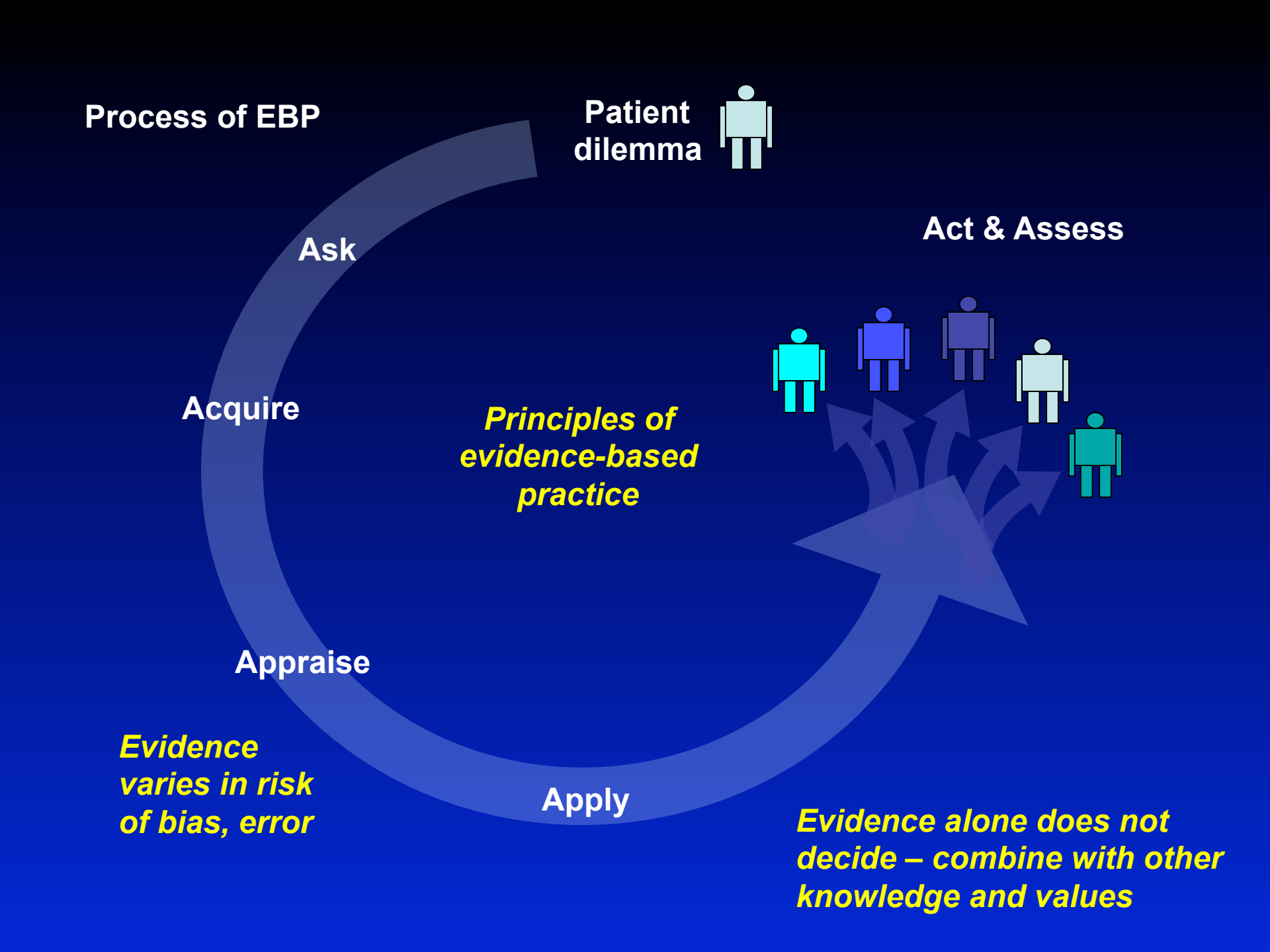
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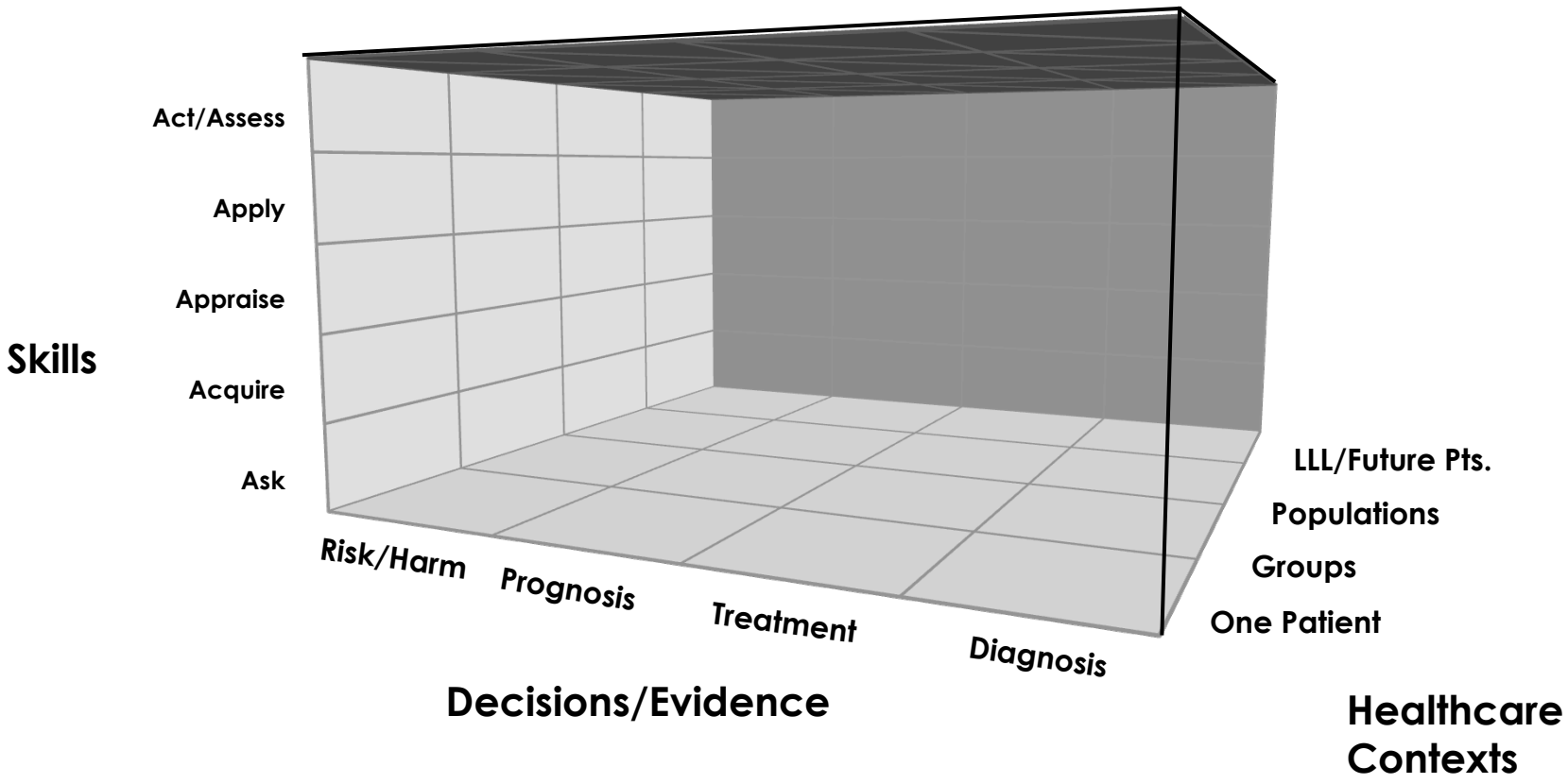
Skills
Act/Assess
Apply
Appraise
Acquire
Ask
Risk/Harm
Prognosis
Treatment
Diagnosis
Decisions/Evidence
LLL/Future Pts.
Populations
Groups
One Patient
Healthcare Contexts

Questions?


Winnie Davis Memorial Hall, Athens, Ga.


Conrad Dr
Prince Ave
Joiner & Associate Realtors
HSC
Russell Hall
15
Buck Rd

Thank You!