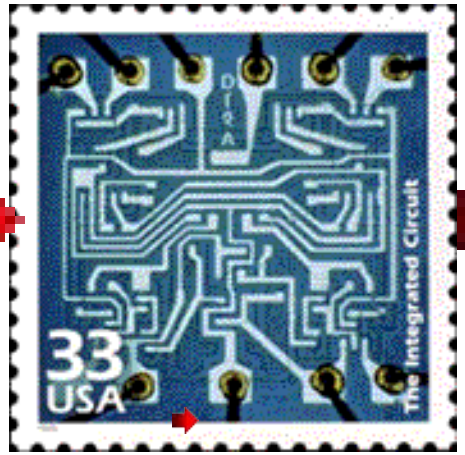
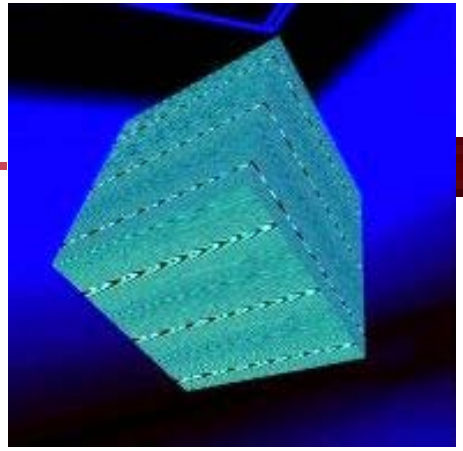

EVIDENCE CUBE MATRIX

PRESENT STATE → FUTURE VISION

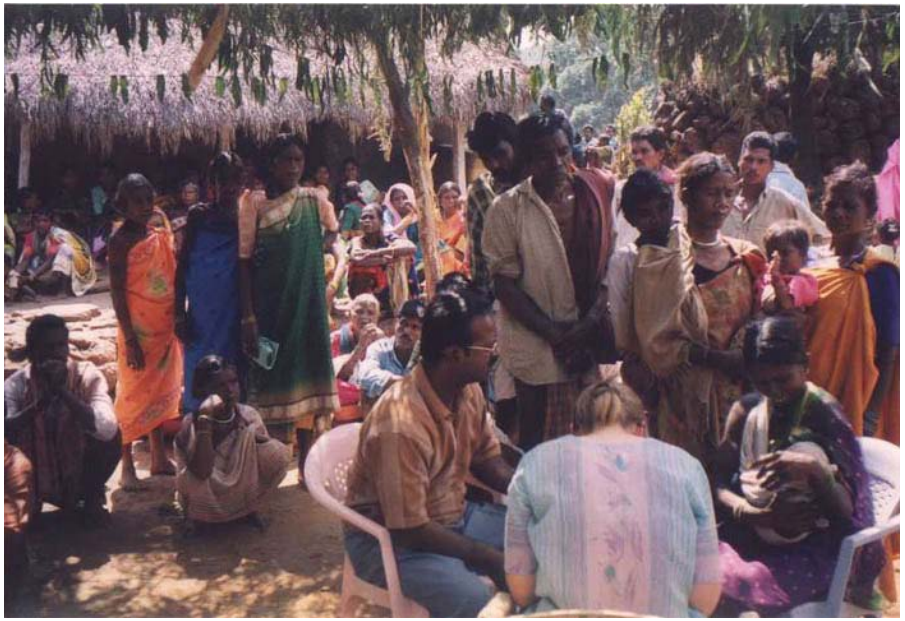




SICILY STATEMENT ON EVIDENCE-BASED PRACTICE

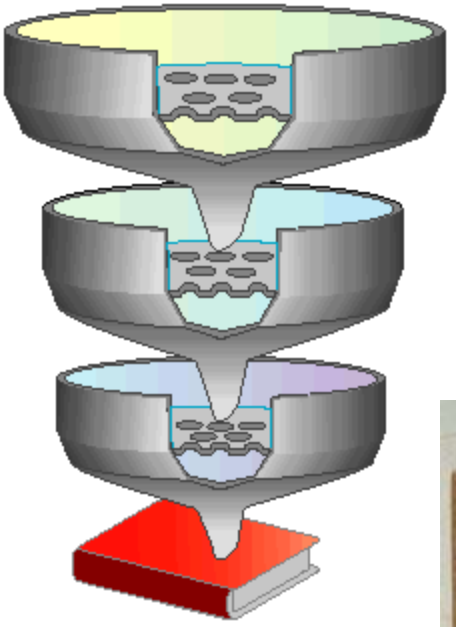
Evidence-Based Practice (EBP) requires that decisions about health care are based on the best available, current, valid and relevant evidence. These decisions should be made by those receiving care, informed by the tacit and explicit knowledge of those providing care, within the context of available resources.

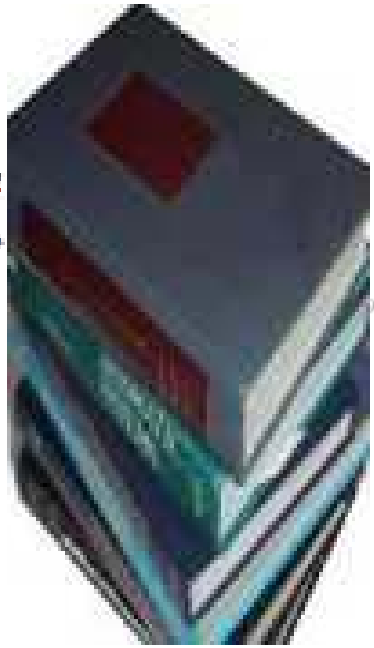
EBP: IMPRACTICAL IN THE REAL WORLD?



Whole Wheat

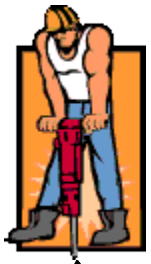
Separating the Wheat From the Chaff!

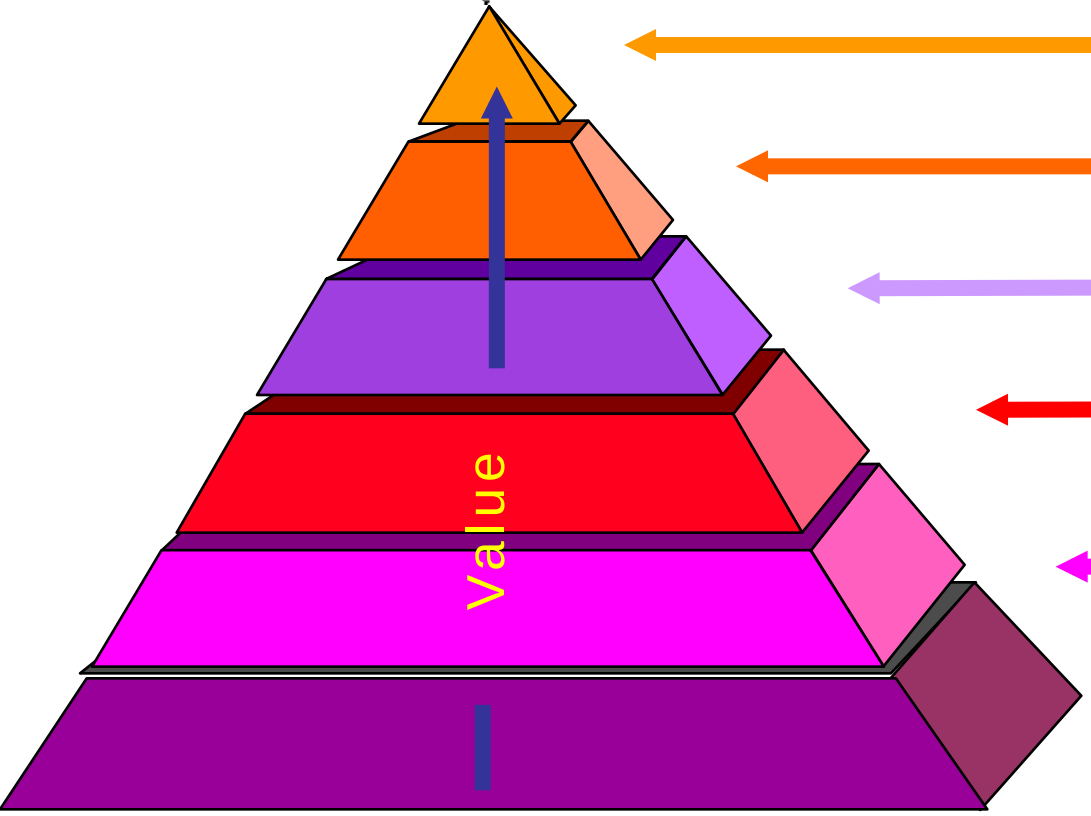




995 illustrated by Yue-Ling Wong

BUILDING UP: REFINING & COMBINING





EBM Practice Guideline

Clinical Evidence
POEMs

Systematic Reviews
Cochrane Library

CATs, Best Evidence,
ACP Journal Club

Reviews: Up-to-Date,
5-Min Clinical Consult

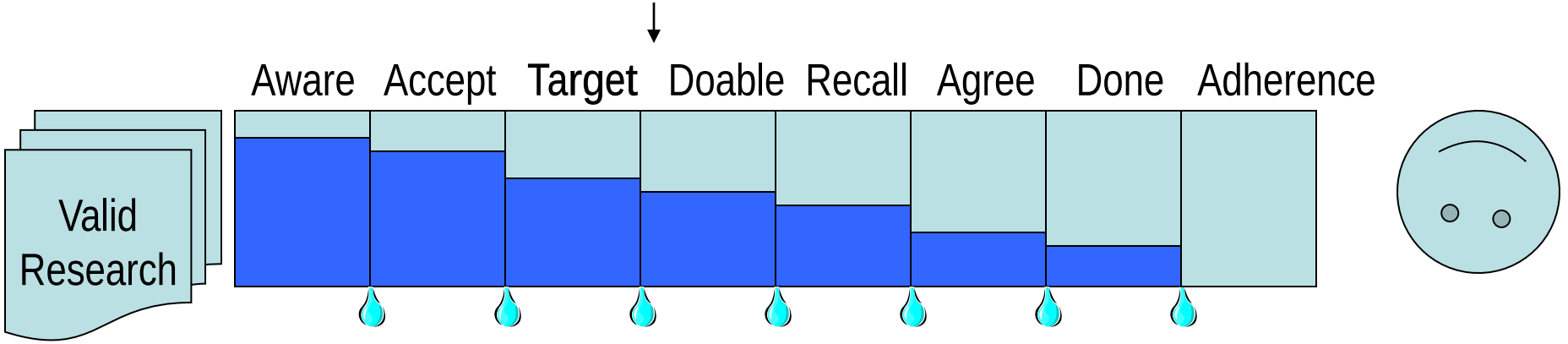
Medline, PubMed

MANAGING INFORMATION: *"PULL" AND "PUSH" METHODS*

- "Pull" – access information when we need it
  - "Just in Time" learning
    - Use whenever questions arise
    - EBM Steps: Question; Search; Appraise; Apply
- Value = $\frac{\text{Validity x Relevance}}{\text{Effort}}$
- "Push" - alerts us to new information
  - "Just in Case" learning
    - Use ONLY for important, new, valid research

A PROBLEM WITH APPLICATION OF EBM: POLICY, DEPLOYMENT, IMPLEMENTATION, PENETRATION

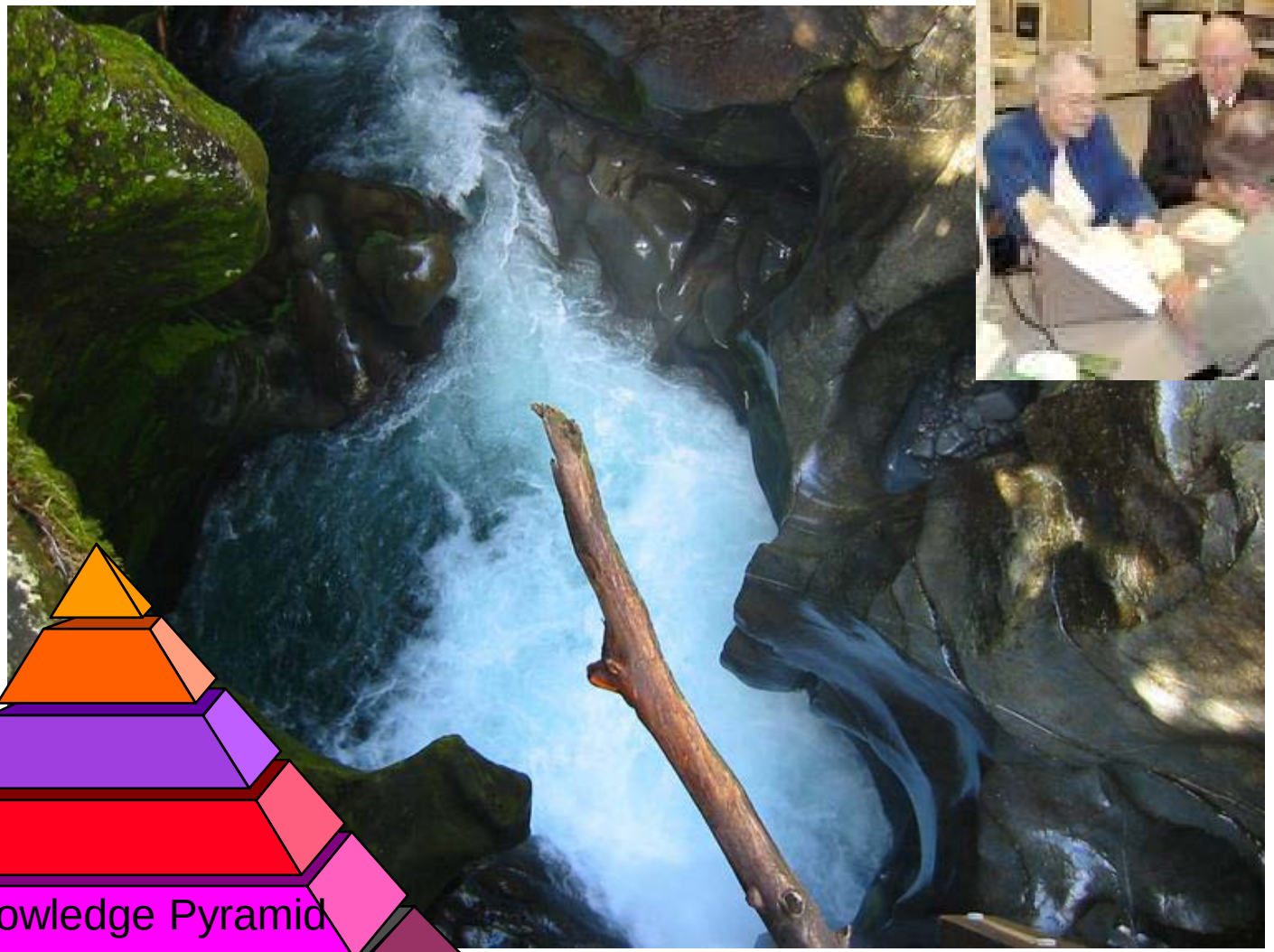
"Leaks" along the pipeline from research to practice & applicability of evidence to practice



Paul Glasziou
Centre for Evidence Based Medicine
University of Oxford

BARRIERS AND GAPS

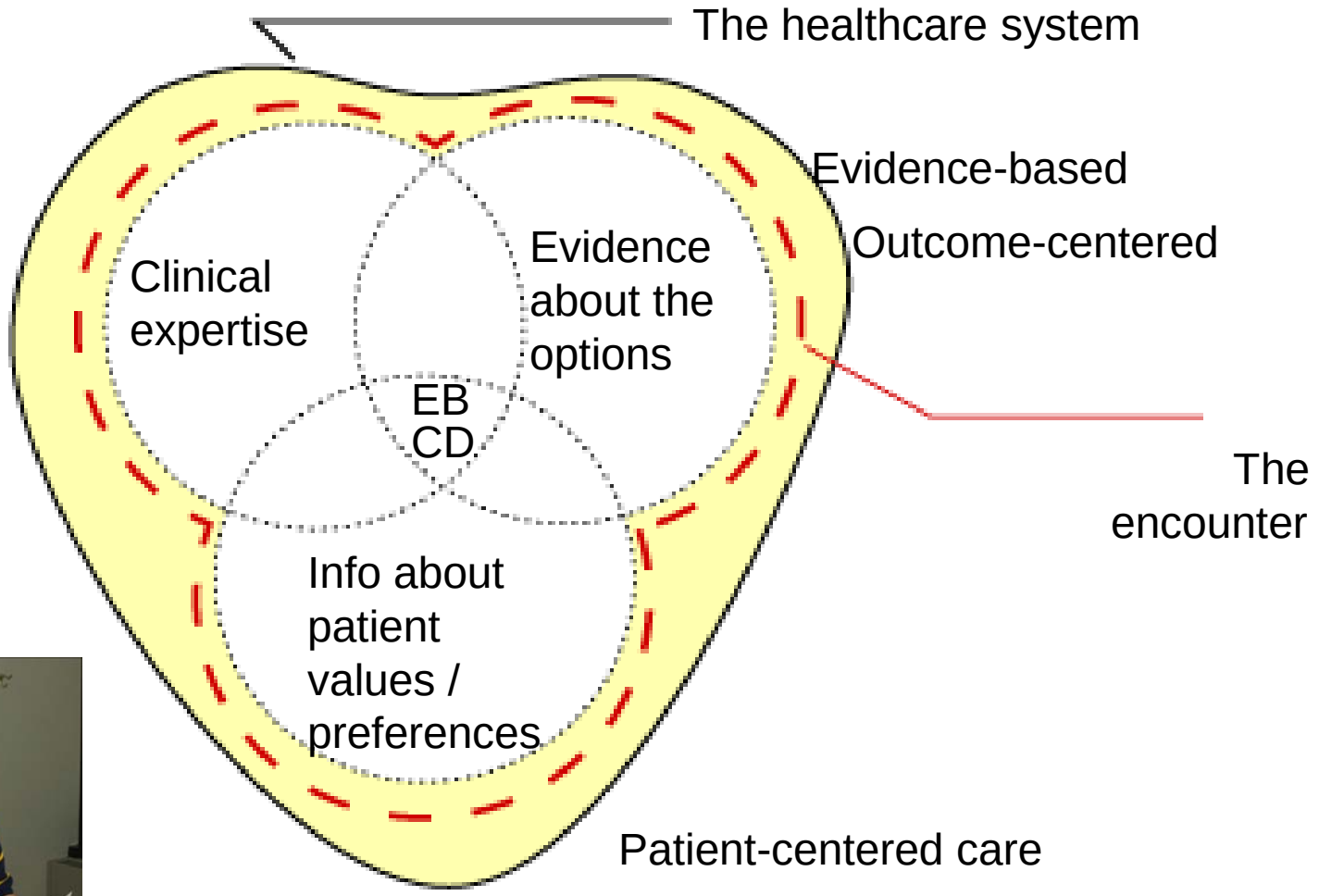
POINT OF CARE



SHRINK THE GAP

COMPONENTS FOR EVIDENCE-BASED CLINICAL DECISIONS

Evidence-based practice



PULL evidence PICO *fast*CAT

Pulling evidence and finding an answer will be much easier after mastering the art of asking focused and relevant questions, with these components: Population/**P**atient, **I**ntervention, **C**omparison (optional), and **O**utcome. < PICO>

PubMed

National Library of Medicine NLM

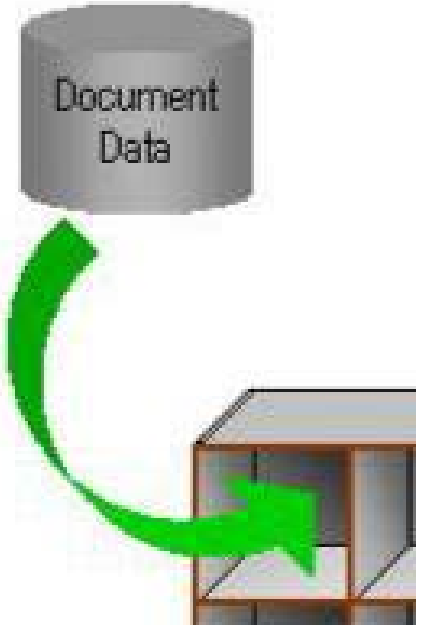
THE COCHRANE COLLABORATION®

ONE EB PRACTICE EXERCISE: <CONSTRUCTING>

one PICO,
one Patient,
one Intervention,
one Outcome

one *fast*CAT

one pigeon hole

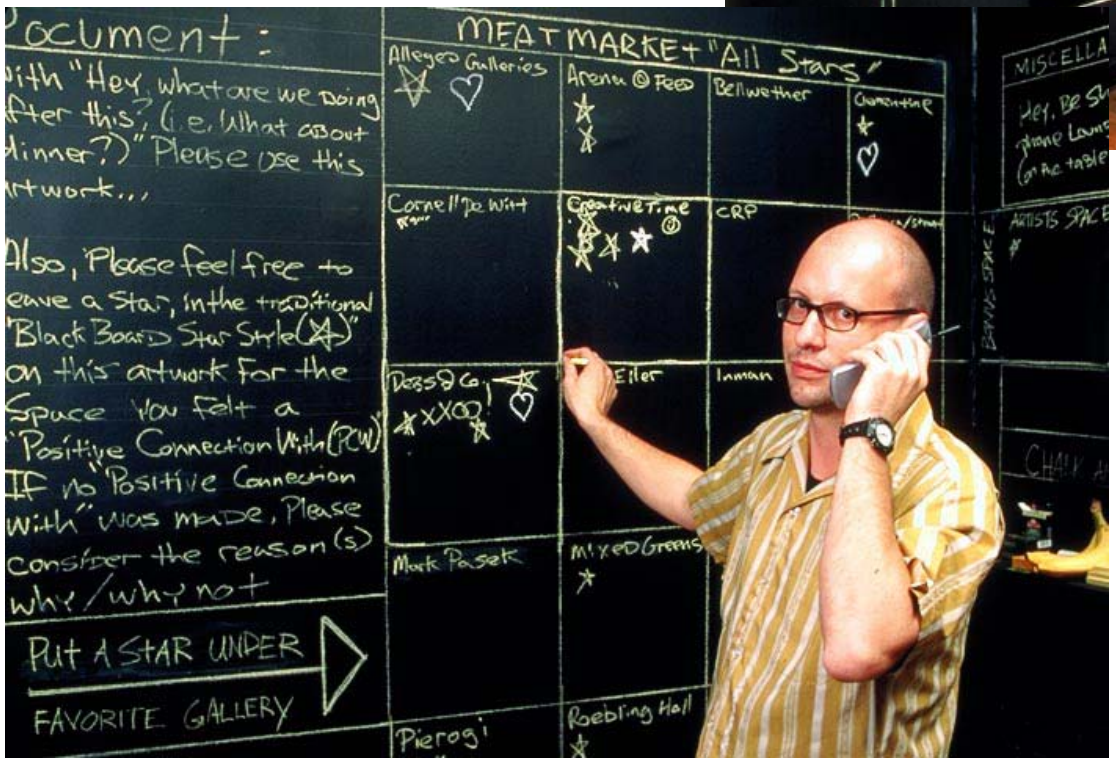


Hypertension,
ACE Inhibitor + HCTZ,
BP control

one cube

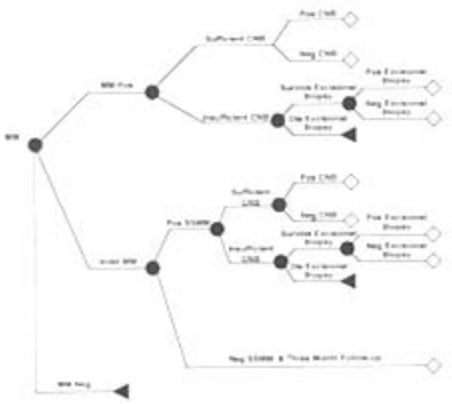
CATBANK LOST & FOUND MESSAGE BOARD

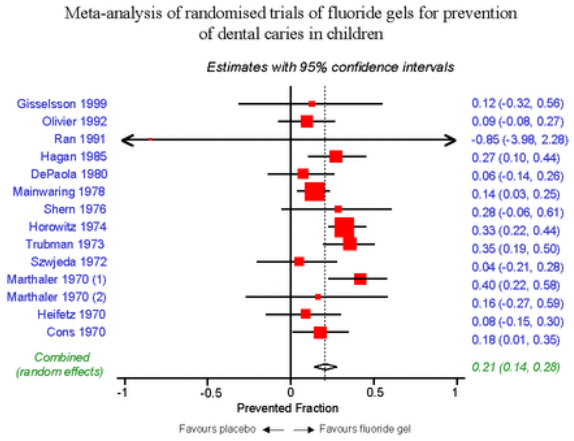
LOW FIDELITY STORAGE



AND RETRIEVAL

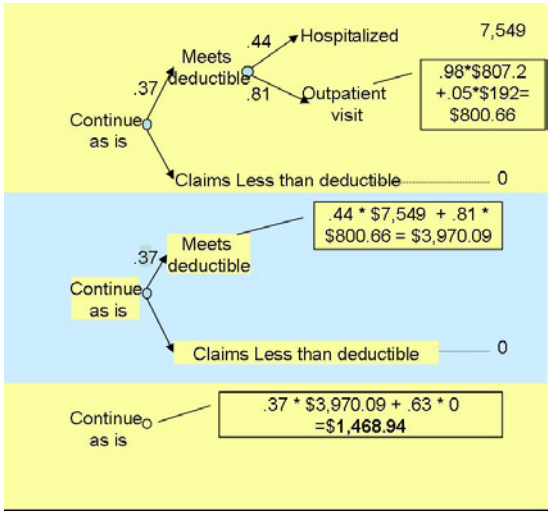
STATE OF THE ART: EB DECISIONS



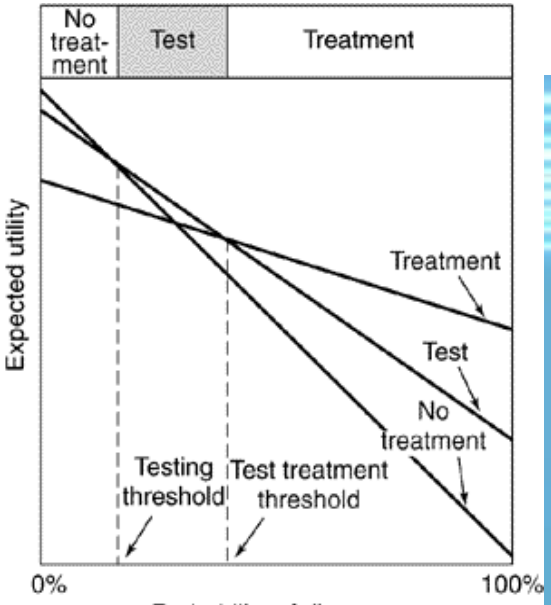


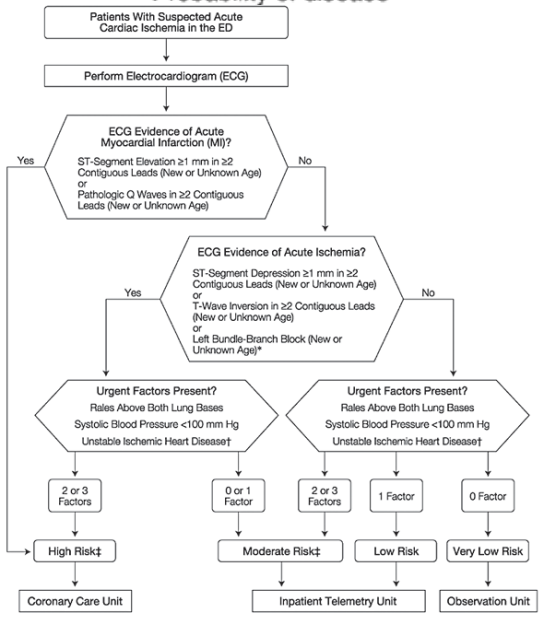
Summary of findings

Outcome	No of Participants (No of trials)	Control group risk (Range)	Relative effect (95% CI)	Absolute effect	Quality	Comments
Depression severity[1]	9554 (99)	-	-	SMD 0.034	⊕⊕⊕⊕ High	depresion severiry comment[1]
Transient side effects resulting in discontinuation of treatment[3]	13366 (123)[2,4]	(32,7%) (3 to 4%)	RR 0.87[5] (0.80 to 0.95)	43 fewer/1 000[3]	⊕⊕⊕⊕ High	Transient side effects comments
Poisoning fatalities	200000 (1)	(0.1%) (5 to 6%)	RR 0.02[2,4] (0.01 to 0.03)[5]	568 fewer/1 000 000	⊕⊕⊕⊕ High	Posisoning fatalites comments

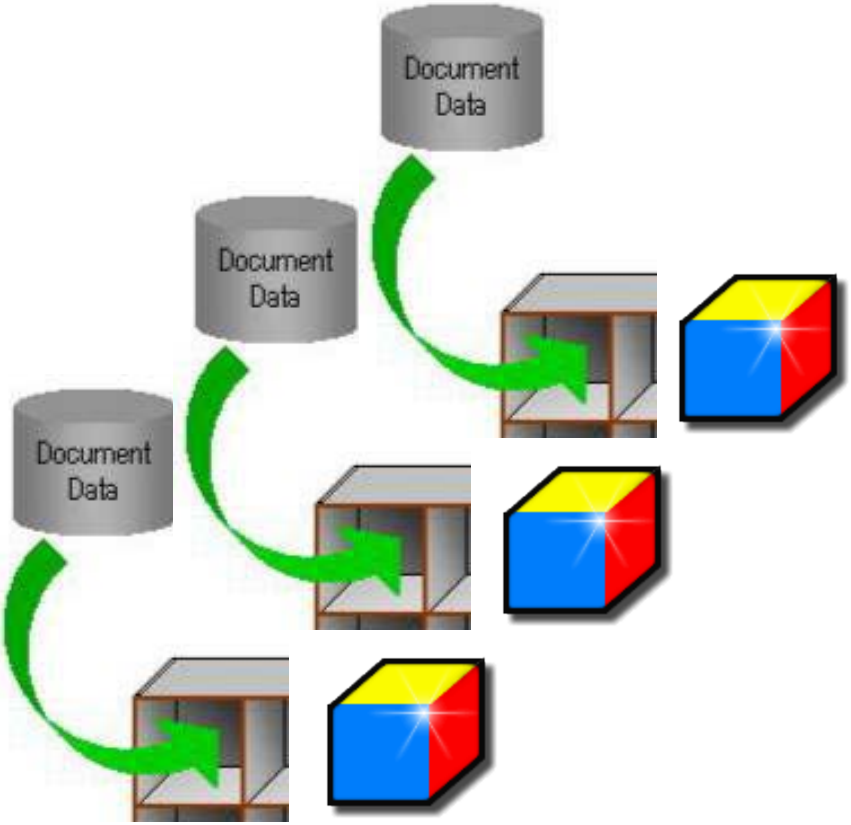


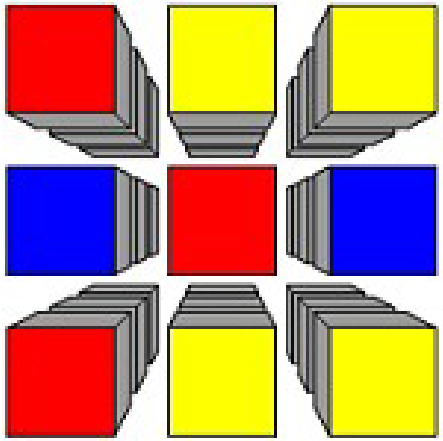
IMAGINE A SUPER TOOL





IMAGINE PROVIDING EVIDENCE FOR A SUPER TOOL





MANY EB PRACTICE EXERCISES: AGGREGATING EVIDENCE

COLUMN OF PIGEON HOLES

P = Osteoporosis

I = Bisphosphonates

O = Outcomes

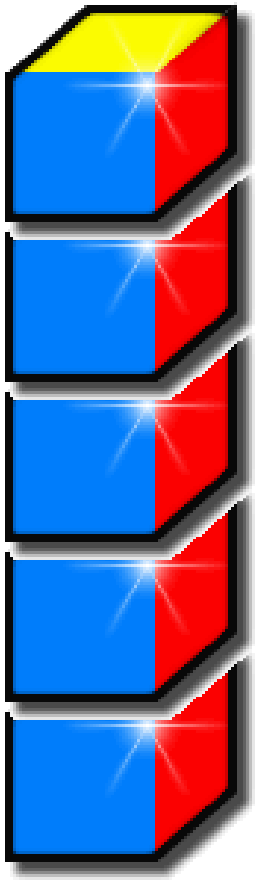
Bone density

Bone fracture

VTE

Gastric irritation

Cost



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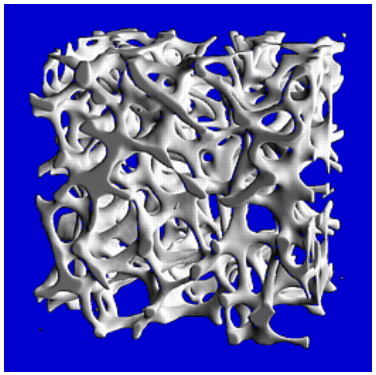
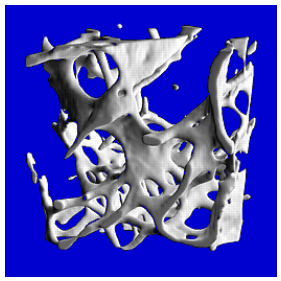
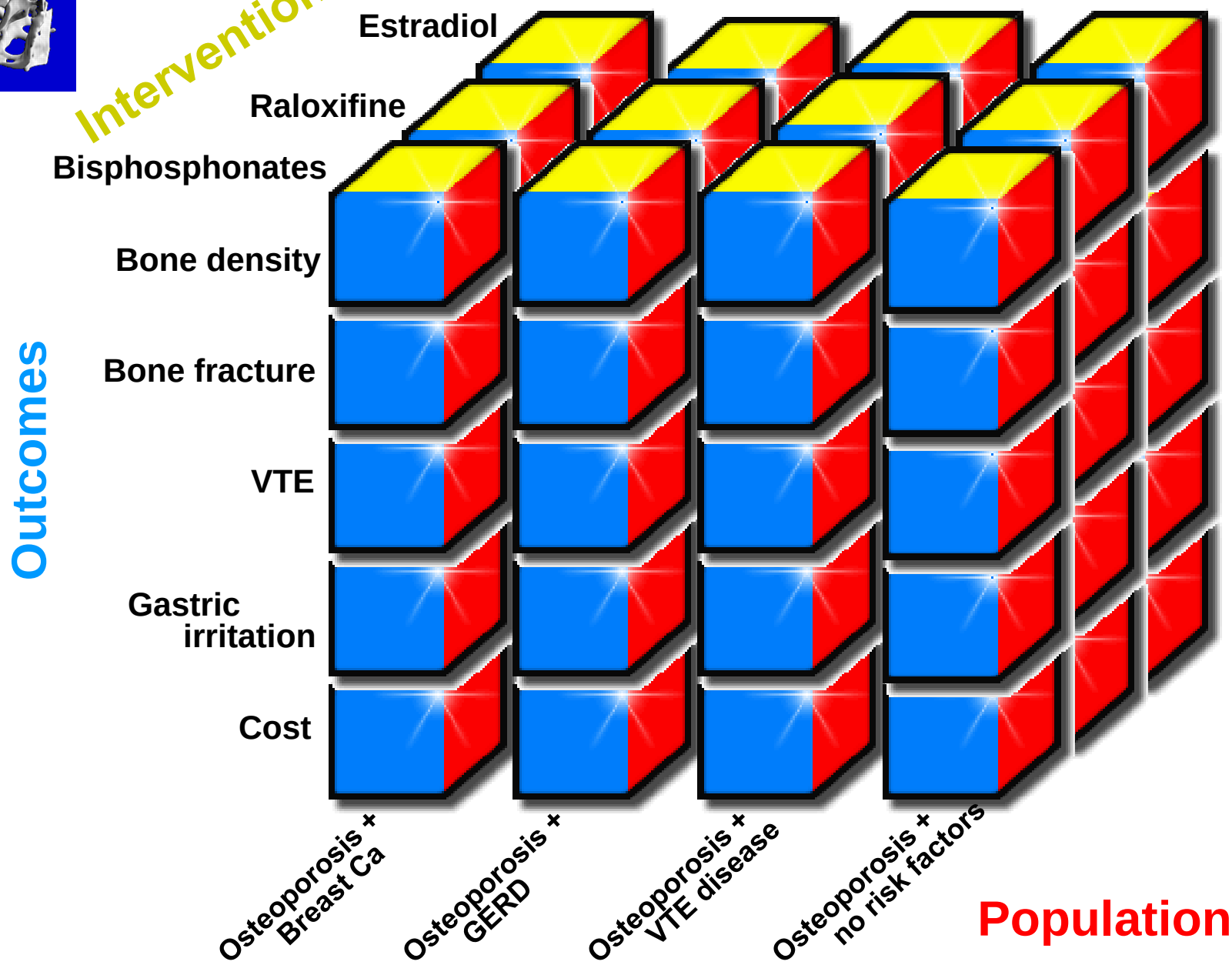
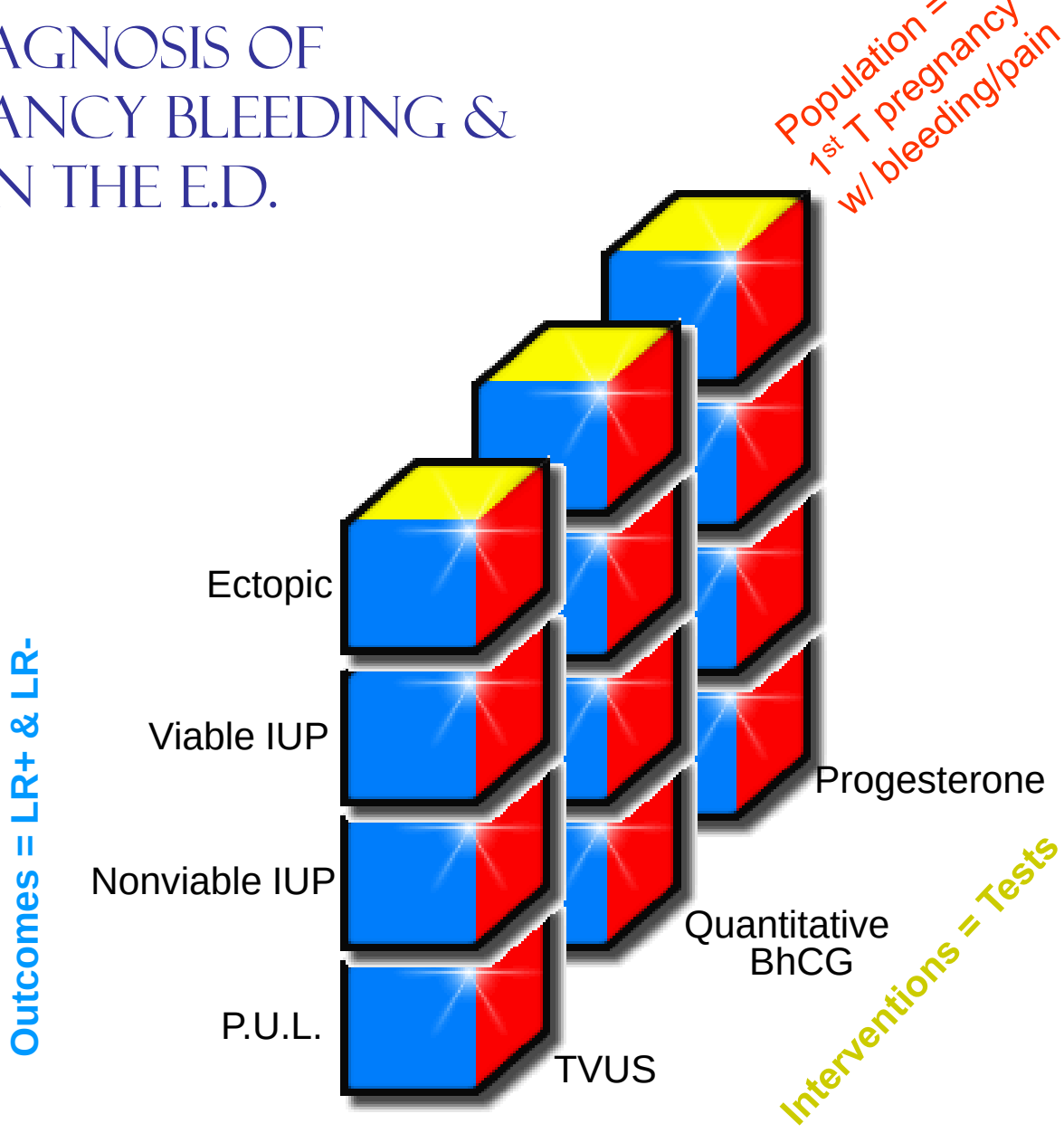




CUBE OF CUBES



SIMPLE EVIDENCE CUBE MATRIX FOR DIAGNOSIS OF EARLY PREGNANCY BLEEDING & PAIN IN THE E.D.



Constructing a simple evidence cube matrix for use of SSRIs to manage hot flashes

O_1 = reduced flashes

O_2 = bothersome effects

O_3 = serious effects

P_1 = menopause no BC	P_2 = menopause BC hx	P_3 = BC tx Tamoxifen
RR = 0.8	RR = 0.7	RR = 0.6
RR = 1.3	RR = 1.3	RR = 1.3
RR = 1.05	RR = 1.05	shared enzyme metabolism: diminished effectiveness of Tamoxifen

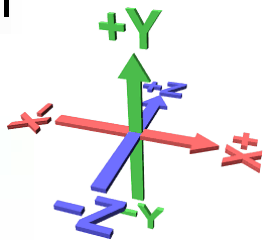
I_1 = Effexor

P_1 = menopause no BC	P_2 = menopause BC hx	P_3 = BC tx Tamoxifen
RR = 0.8	RR = 0.7	RR = 0.6
RR = 1.3	RR = 1.3	RR = 1.3
RR = 1.05	RR = 1.05	shared enzyme metabolism: diminished effectiveness of Tamoxifen

I_2 = Paxil

P_1 = menopause no BC	P_2 = menopause BC hx	P_3 = BC tx Tamoxifen
RR = 0.8	RR = 0.7	RR = 0.6
RR = 1.3	RR = 1.3	RR = 1.3
RR = 1.05	RR = 1.05	shared enzyme metabolism: diminished effectiveness of Tamoxifen

I_3 = Prozac



BUILDING AN EVIDENCE CUBE MATRIX FOR PCOS

Populations:

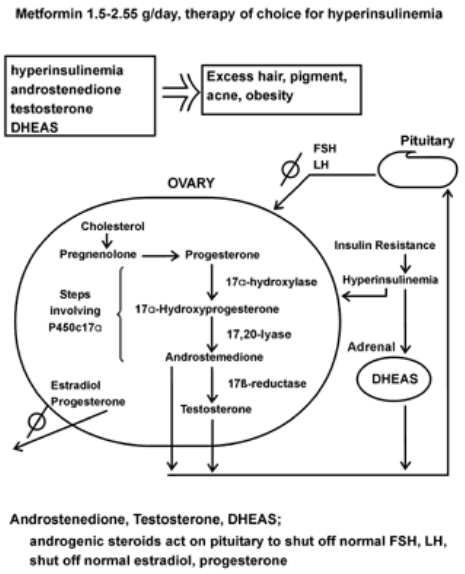
1) adolescent, obese
2) adolescent, nonobese
3) adult desiring fertility, obese
4) adult desiring fertility, nonobese
5) adult not desiring fertility, obese
6) adult not desiring fertility, nonobese

Outcomes:

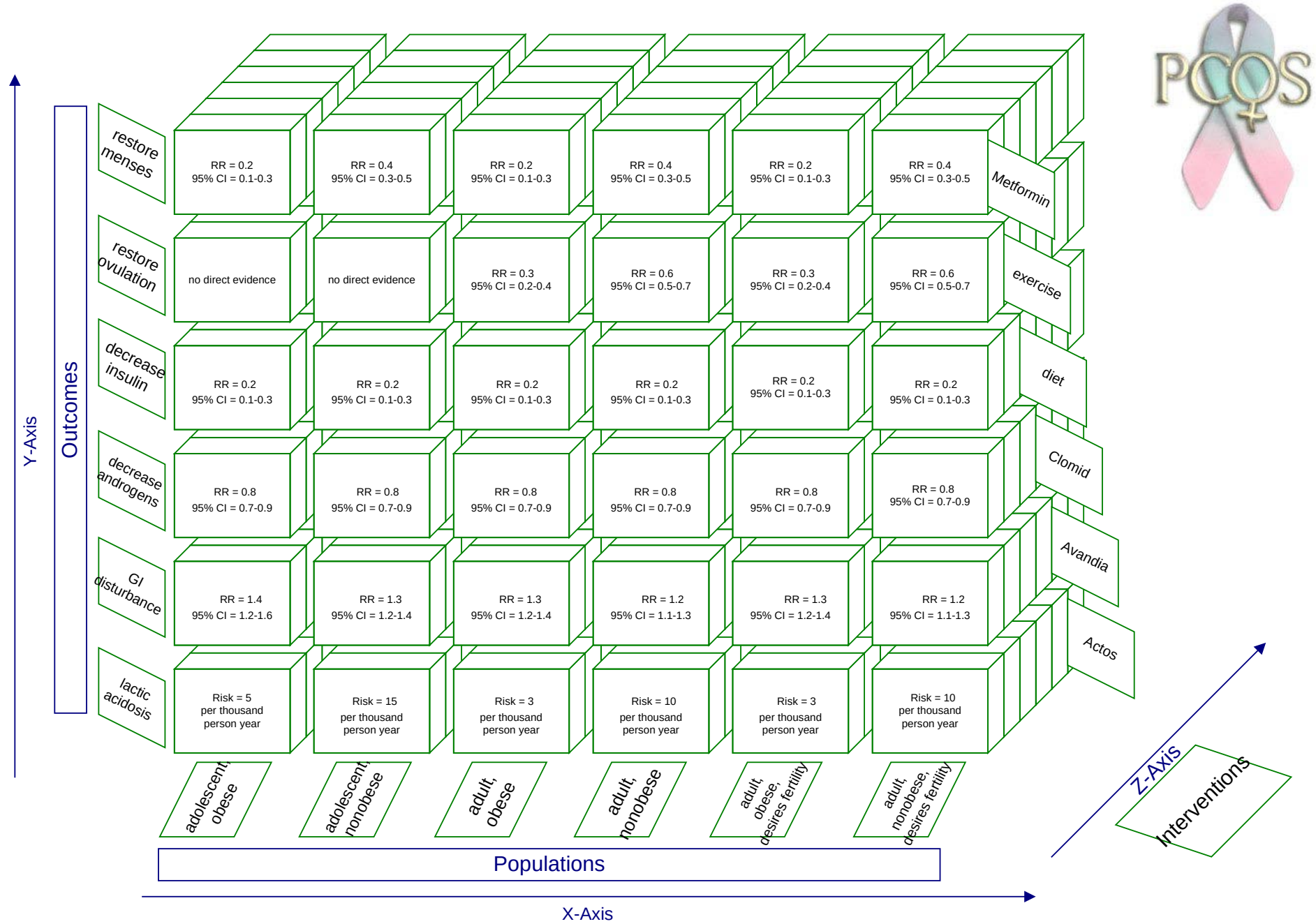
1) restore normal menstruation
2) restore ovulation
3) decreased insulin levels
4) decreased hyperandrogenism
5) decreased hirsutism & acne
6) prevent T2DM
7) prevent CVD
8) increase HDL
9) decrease LDL
10) pregnancy
11) live birth
12) weight, BMI
13) nausea & vomiting
14) GI disturbance
15) lactic acidosis
16) decreased B12 absorption

Interventions:

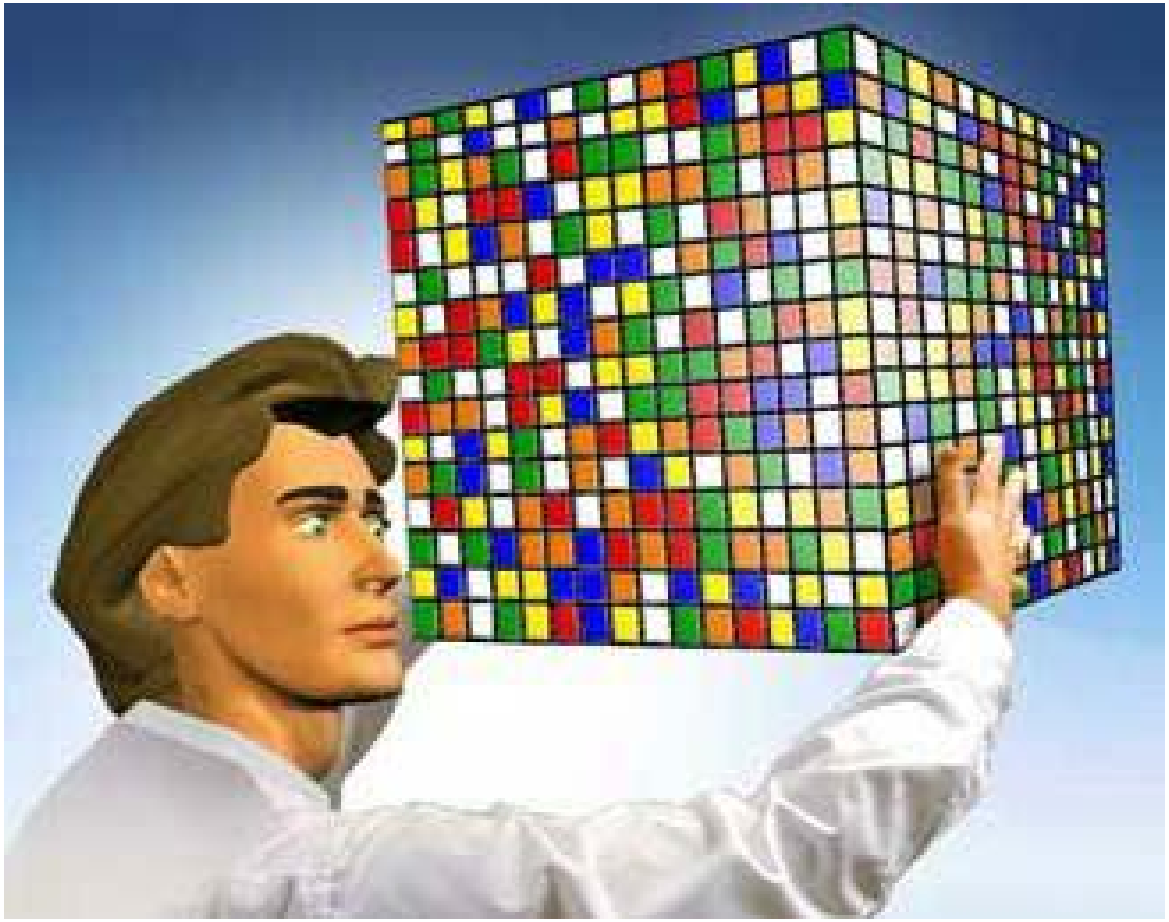
1) diet
2) exercise
3) diet and exercise
4) Metformin <1500mg/d
5) Metformin >1500mg/d
6) Clomiphene citrate
7) Metformin + clomiphene
8) Rosiglitazone (Avandia)
9) Pioglitazone (Actos)



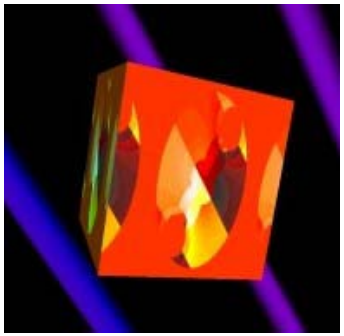
CONSTRUCTING AN EVIDENCE CUBE MATRIX FOR PCOS

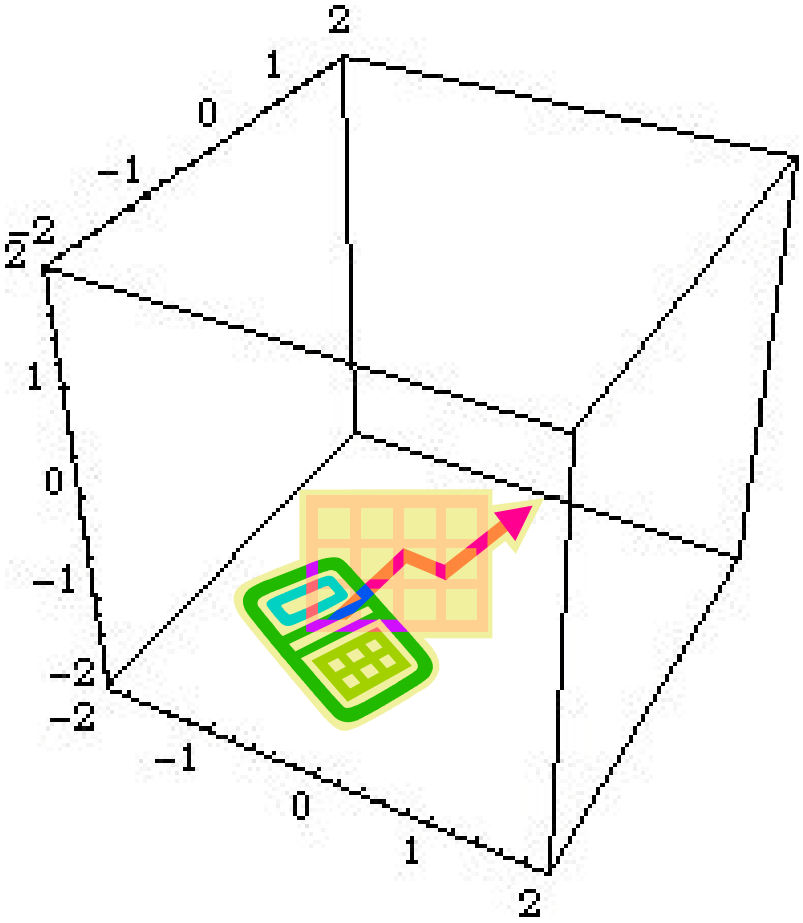


EVIDENCE CUBE MATRIX CAN BE SMALL & SIMPLE OR BIG & AUDACIOUS



WHAT'S INSIDE AN EVIDENCE CUBE?





- PICO elements
- Recommendation statements
  - Grade strength & quality
  - Benefit-risk trade-off
- Assumptions
  - Prevalence
  - Value weighting
  - Economic issues
- Diagnosis: LR+, LR-, PPV, NPV, Sens, Spec
- Treatment: effect, OR, RR, RRR, ARR, NNT, 95% CI
- Summary of Evidence Table
- Synopsis / CAT / POEM
- Citations

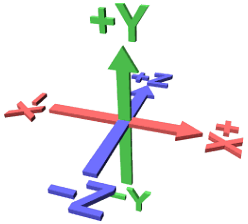
CONSTRUCTING, STORING, MAINTAINING

Constructing:

1) subpopulation domains

2) intervention domains

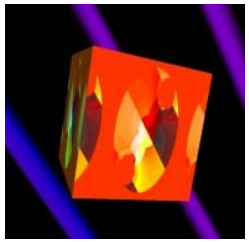
3) critical and important outcomes



4) systematic reviews, refined evidence, critical appraisal of best evidence

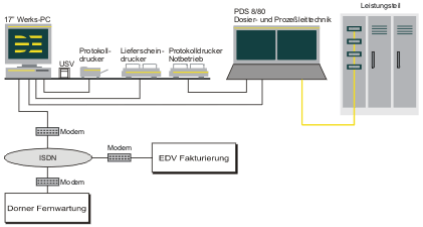
THE COCHRANE COLLABORATION®

5) input evidence data to cube



Storing:

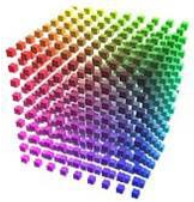
1) electronic database



2) internet accessible

3) searchable

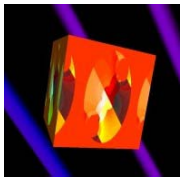
4) flexible ability to reconstruct cube matrices



Maintaining:

1) new literature

2) update data to cube



3) highlight new evidence within cube matrix

4) alert to dependent tools

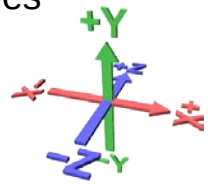
RETRIEVING EVIDENCE,
DRAWING ON A CUBE MATRIX FOR AN INDIVIDUAL PATIENT CDS,
DRAWING ON A CUBE MATRIX FOR TOOL CREATION - CDR

Retrieving:

1) identify subpopulation domain

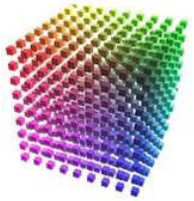
2) select intervention options

3) select critical and important outcomes



4) search

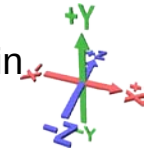
5) retrieve from cube matrix



6) review evidence data

Drawing on a cube matrix for an individual patient CDS:

1) identify best-fit subpopulation domain



2) select appropriate intervention options

3) select critical and important outcomes

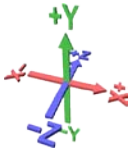
4) search

5) retrieve from cube matrix

6) review evidence data with patient and incorporate values and preferences

Drawing on a cube matrix for tool creation - CDR:

1) identify subpopulation domains



2) select intervention options

3) select critical and important outcomes

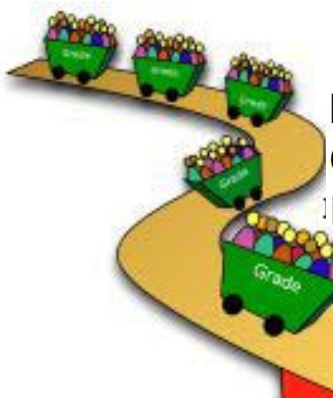
4) search

5) retrieve from cube matrix

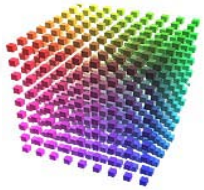
6) review evidence data and build into tool, using hyperlinks back to supportive evidence data and citations

EVIDENCE FOR ALL, EVIDENCE FOR ONE

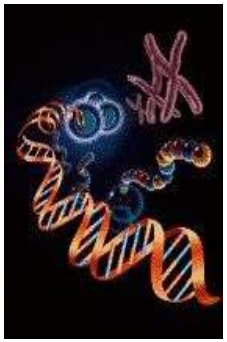
MASS CUSTOMIZATION OF EVIDENCE BASED PRACTICE

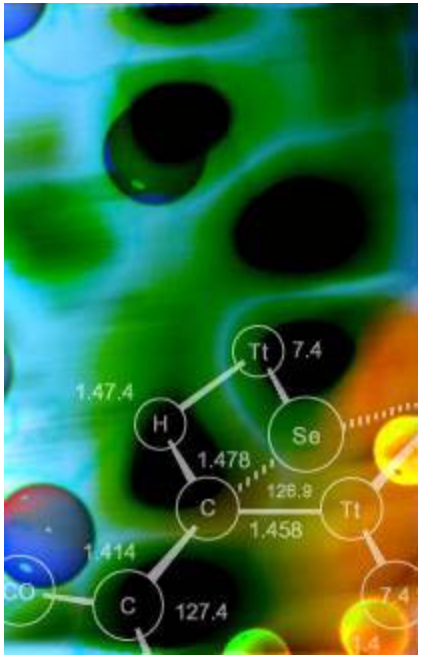


Mass Delivery of Medicine
Cottage industry
Industrial age assembly line



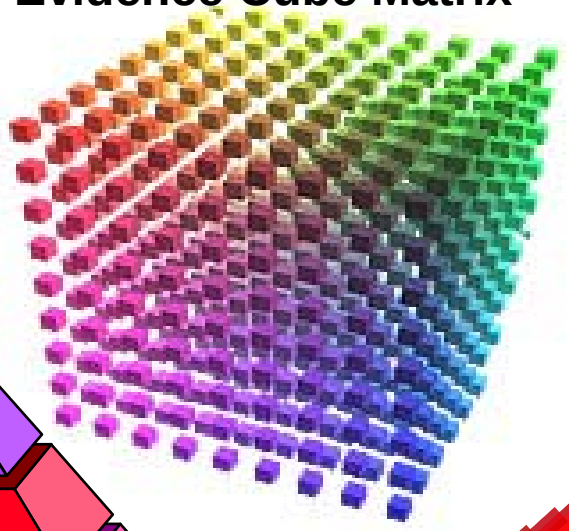
Mass Customization
21st century of personalized
Health evidence and decisions

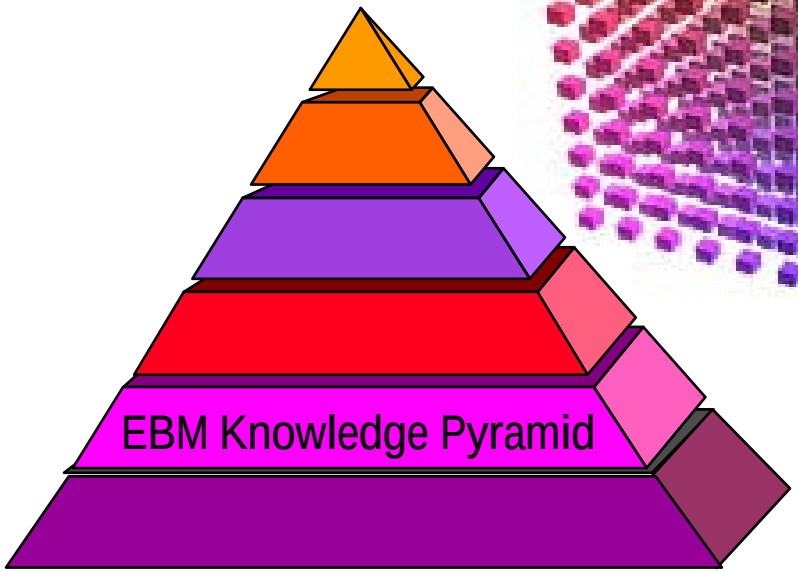


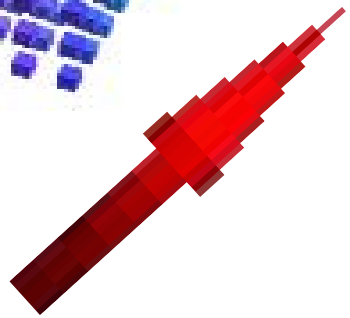


EVIDENCE CUBE MATRIX IN THE GAP

Evidence Cube Matrix







Point of Care Clinical Decision Support Tool For Evidence Based Practice

SHRINK THE GAP

THANK-YOU QUESTIONS?