



U.S. Department of Health and Human Services
National Institutes of Health



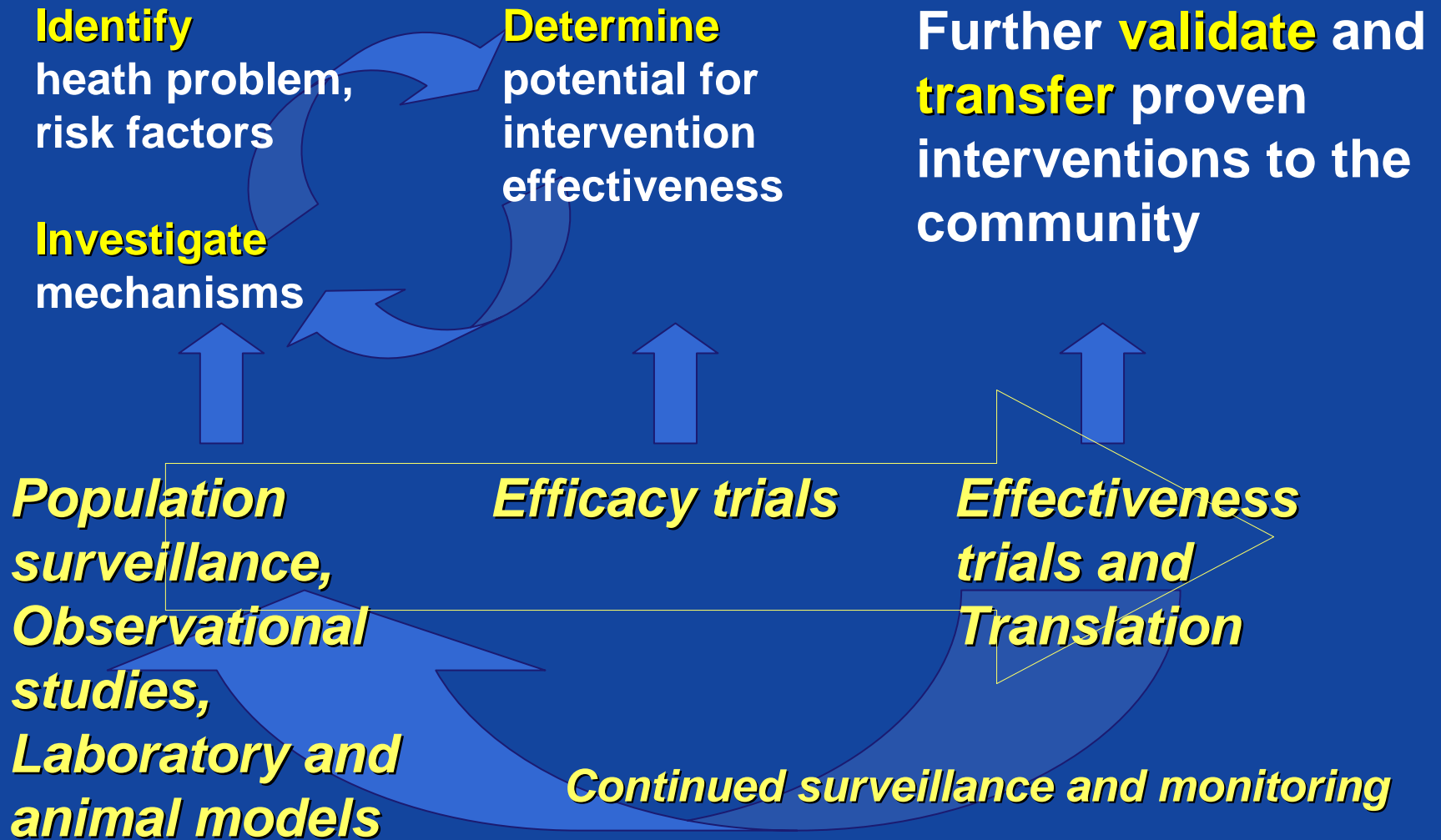
Debate: What Type of Evidence Will Advance Behavioral Medicine?

From Basic Science to Population Health

Peter G. Kaufmann, Ph.D.

...for what purpose?

From Epidemiology to Application



Today's Random Medical News

from the New England
Journal of
Panic-Inducing
Gribblechuck

WESLEY



CAN CAUSE IN

ACCORDING TO A
REPORT RELEASED
TODAY...



SOCIETY *of* BEHAVIORAL MEDICINE

Mission Statement

The Society of Behavioral Medicine is a multidisciplinary organization of clinicians, educators, and scientists dedicated to promoting the **study of the interactions** of behavior with biology and the environment, and the **application of that knowledge** to improve the health and well being of individuals, families, communities and populations.

Consider three examples:

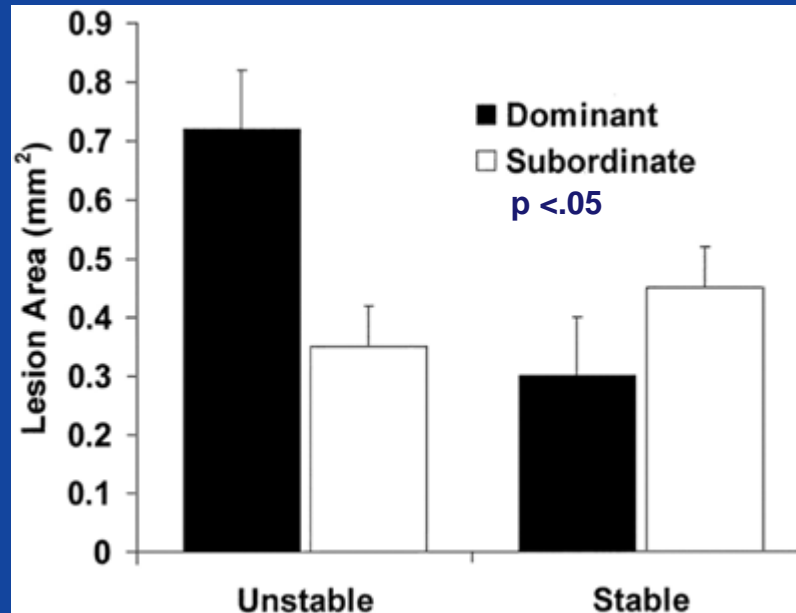
- stress management for coronary patients

- depression for post-MI patients

- weight loss and exercise for prevention of diabetes

- ...and how they affect practice

Coronary atherosclerosis accelerates in monkeys housed in unstable social groups.

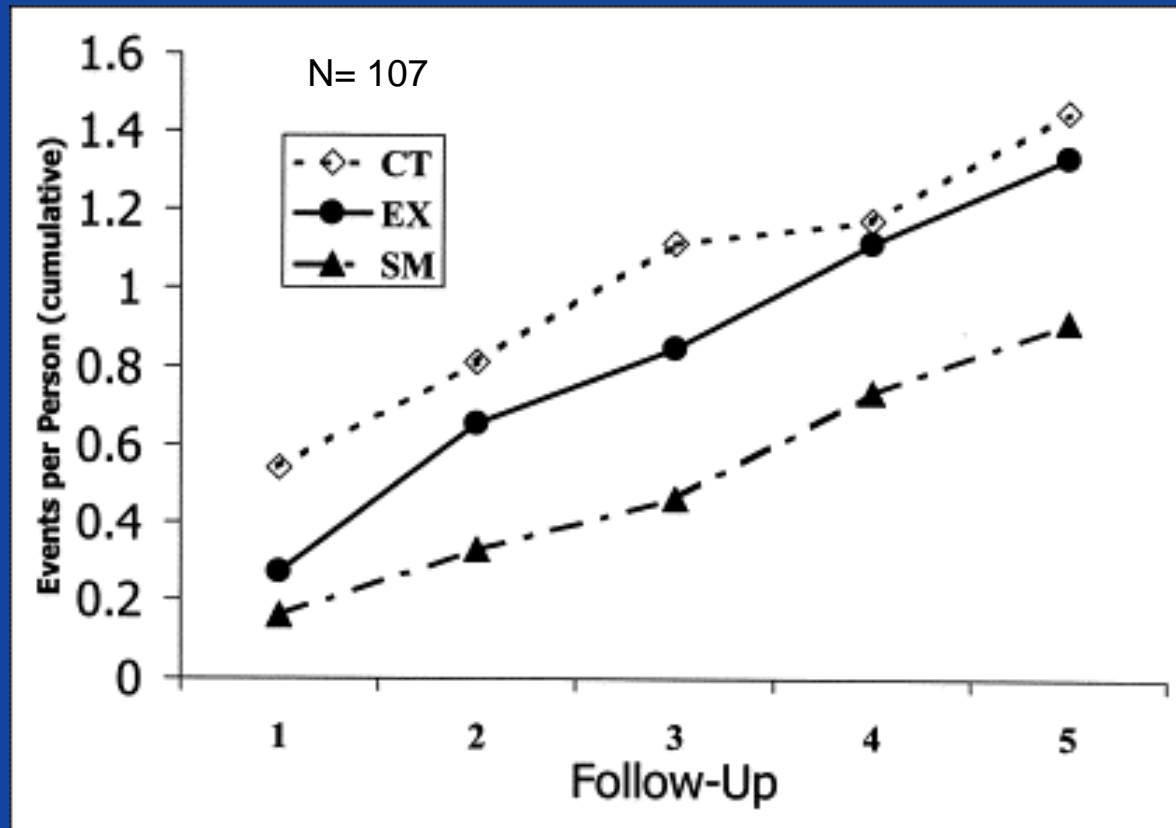


Adapted from J. Kaplan et al., Arteriosclerosis, 1982

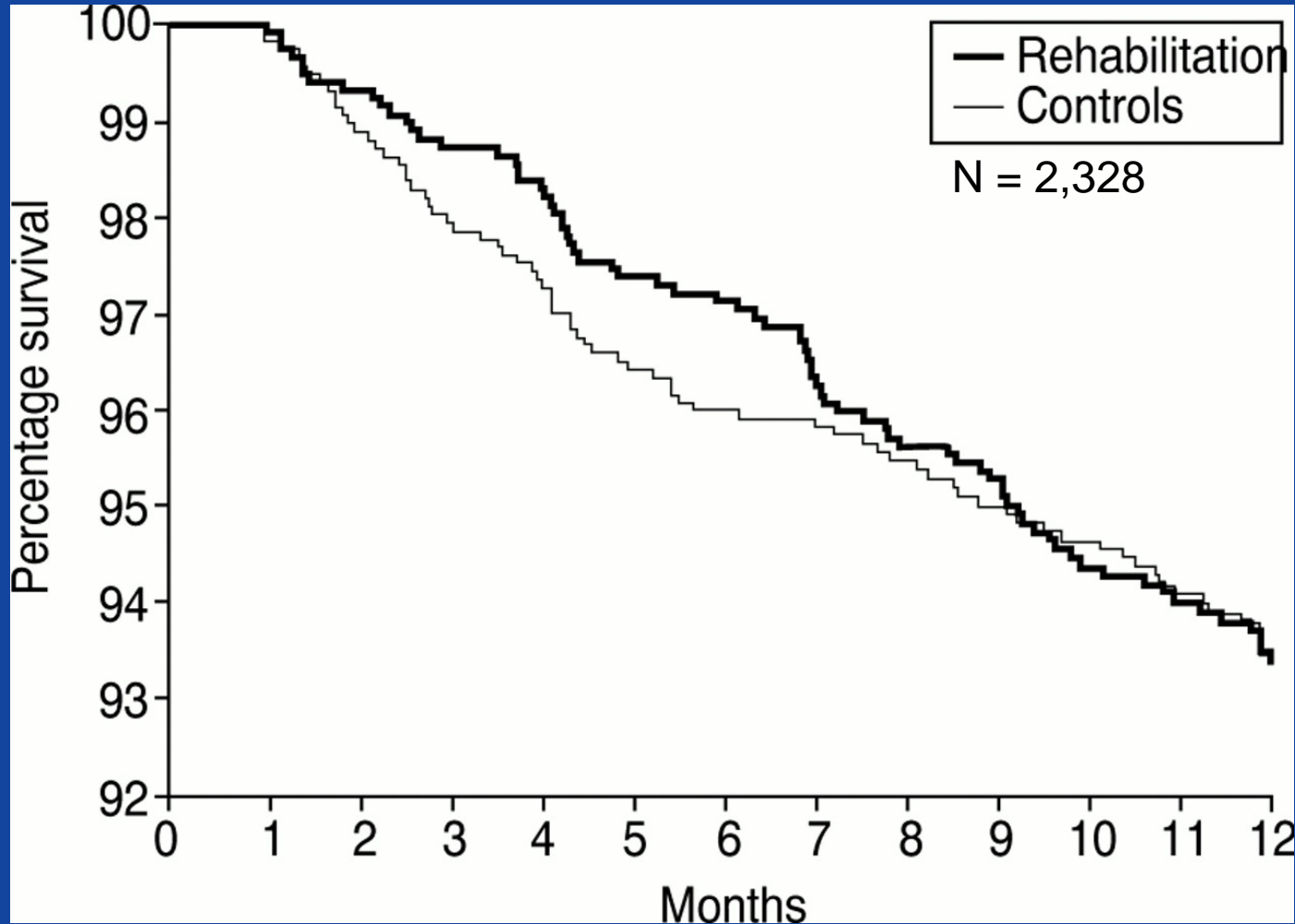
Mental stress in CAD patients increases risk of acute cardiac events

<u>Author</u>	<u>Reference</u>	<u>N</u>	<u>Years of Follow-up</u>	<u>Outcome Measure</u>	<u>RR (CI)</u>
Jain	AJC 1995	30	2	Death/angina	2.5 est.
Jiang	JAMA 1996	126	5	Death/revasc.	2.2 (1.01-4.81)
Krantz	AJC 1999	79	3.5	Death/revasc.	2.4 (1.1-5.2)
Sheps	Circ 2002	196	5.2	Death	3.0 (1.04-8.36)

Stress management reduces cardiac events in CHD patients



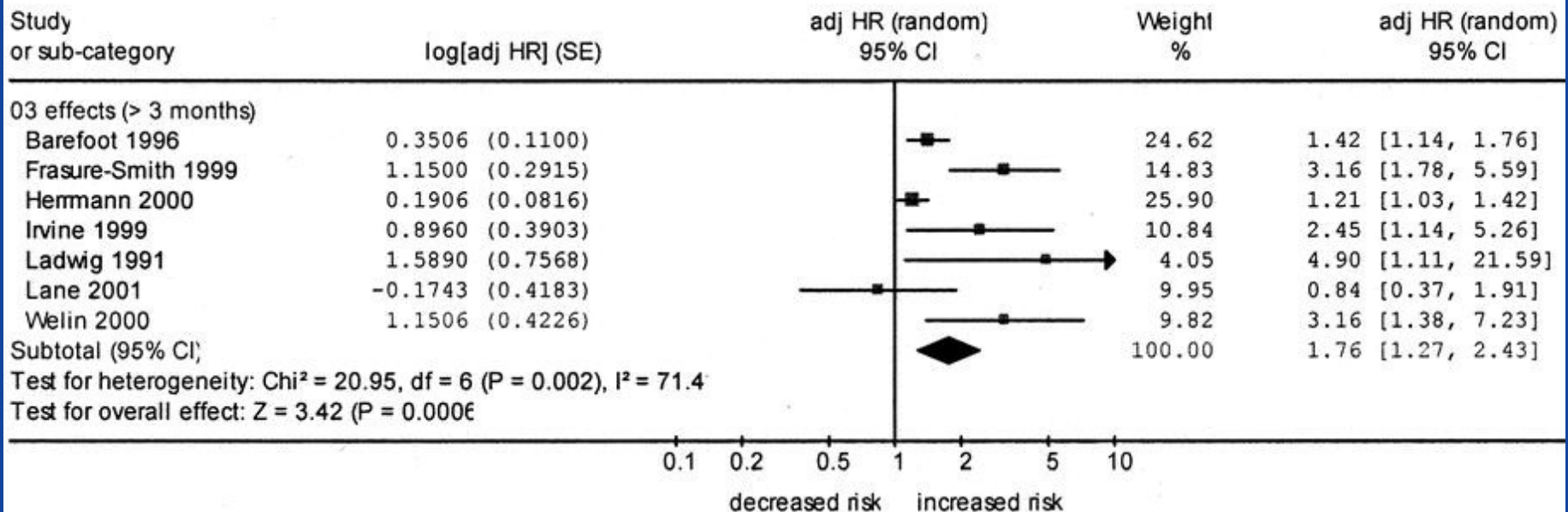
Jones and West : survival after 28 days of “psychological” rehabilitation [Unselected, Consecutive Post-MI Patients]



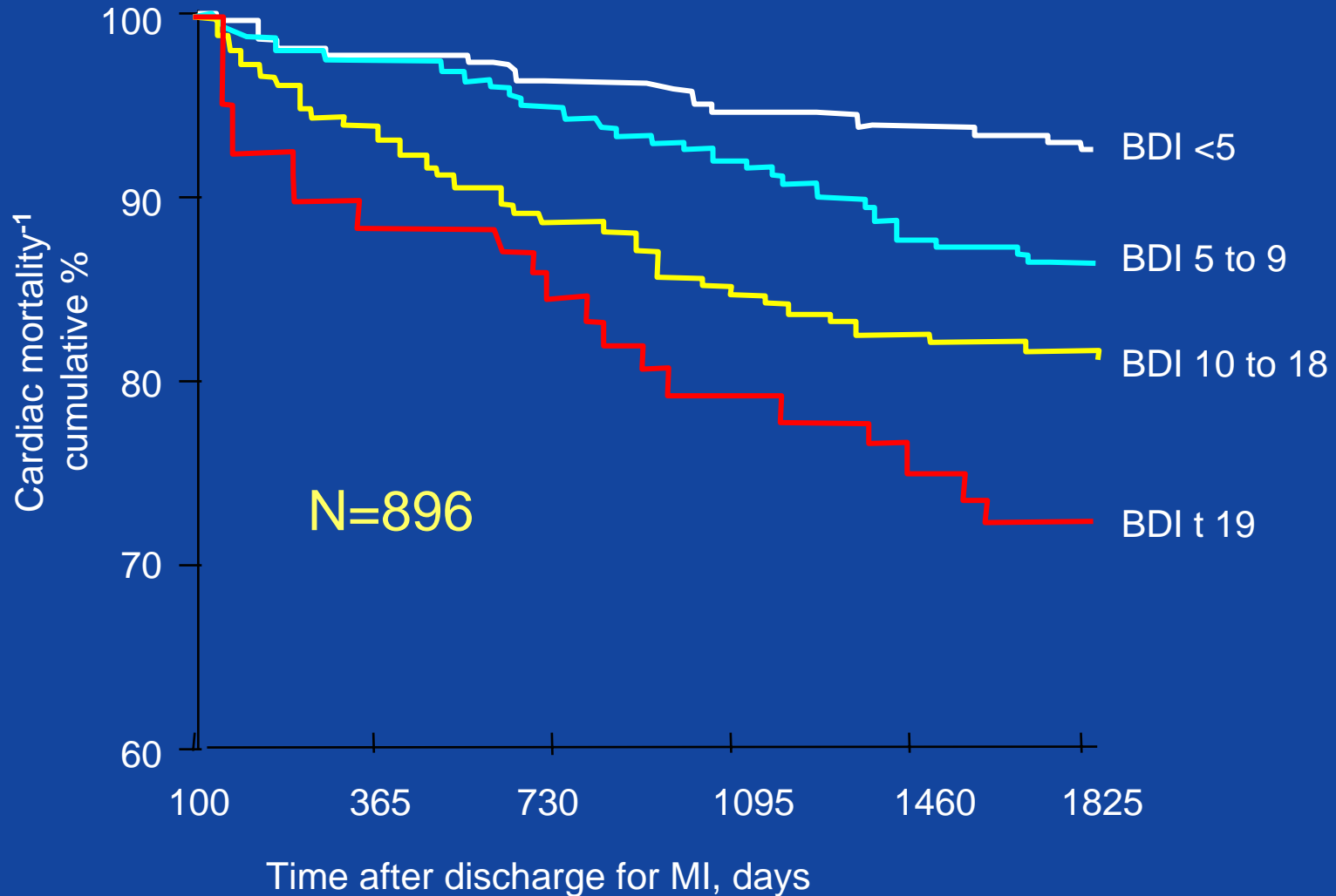
Jones, D A et al. BMJ 1996;313:1517-1521

Depressive symptoms increase CHD mortality- adjusted hazard ratios

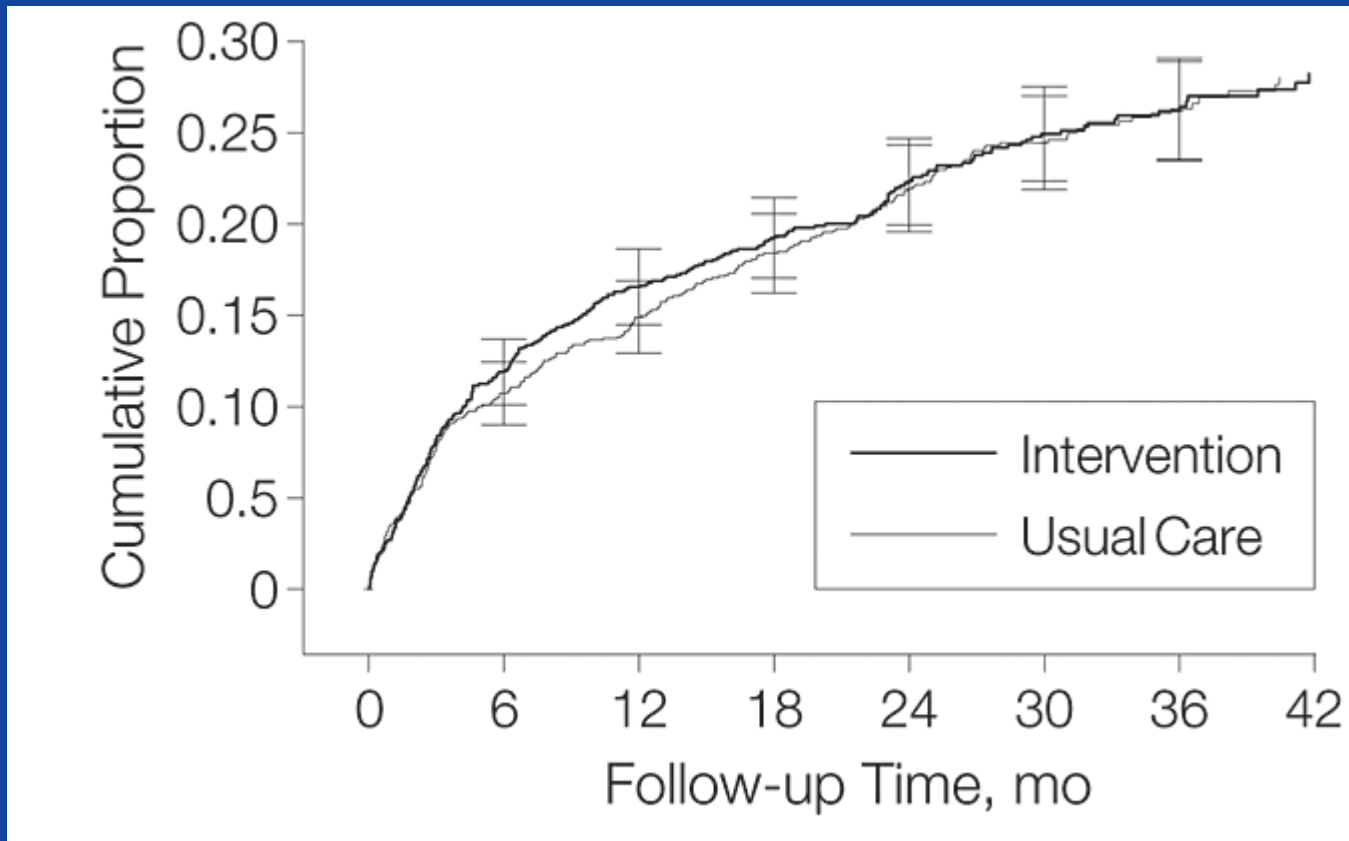
Review: Depressive symptoms as a risk factor in CHD patients
 Comparison: 06 Depressive symptoms as a risk factor for mortality (adjusted Hazard ratios)
 Outcome: 03 Mortality of CHD patients (all studies)



Dose-response relationship of depression severity to risk of death after MI

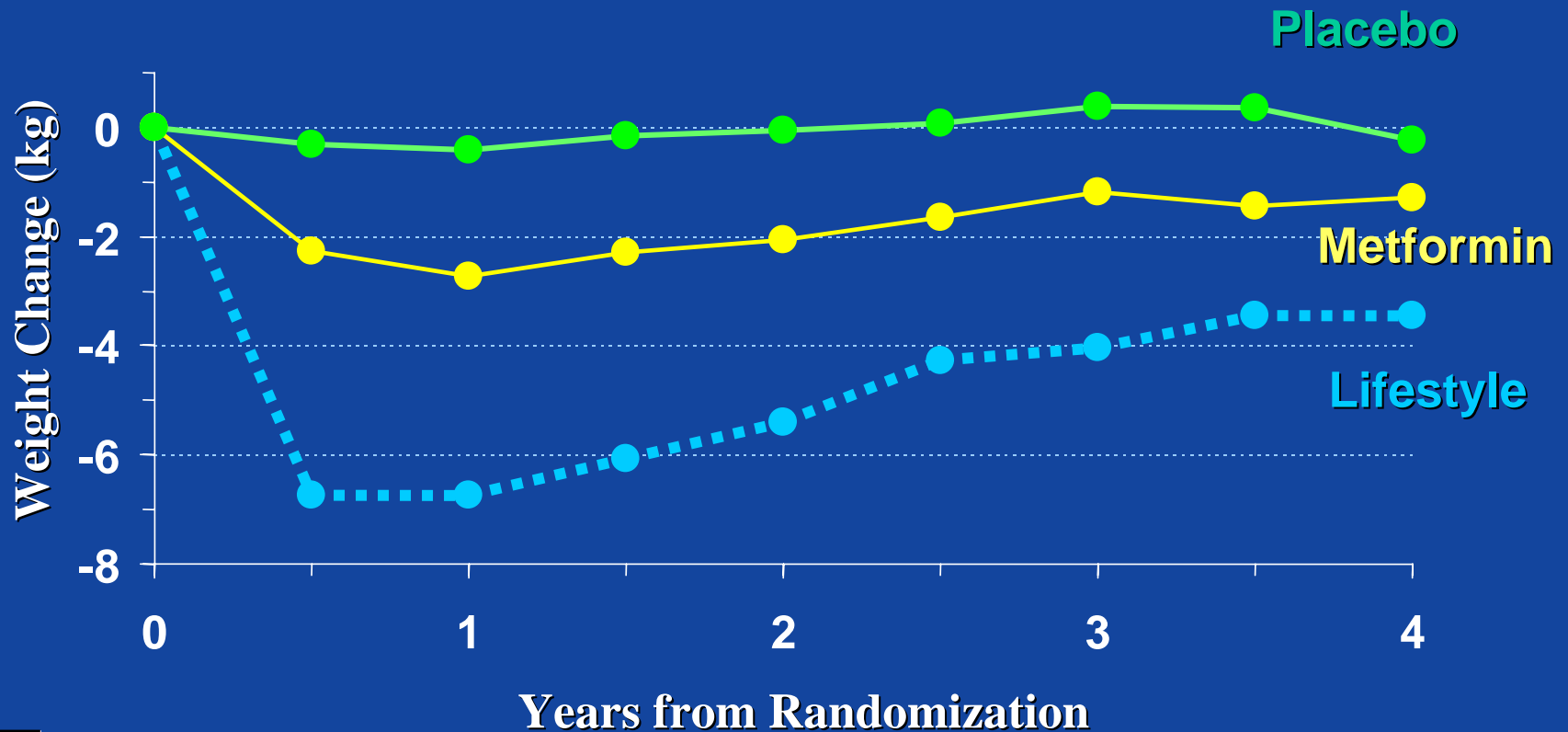


Event-free survival post-MI, ENRICHD



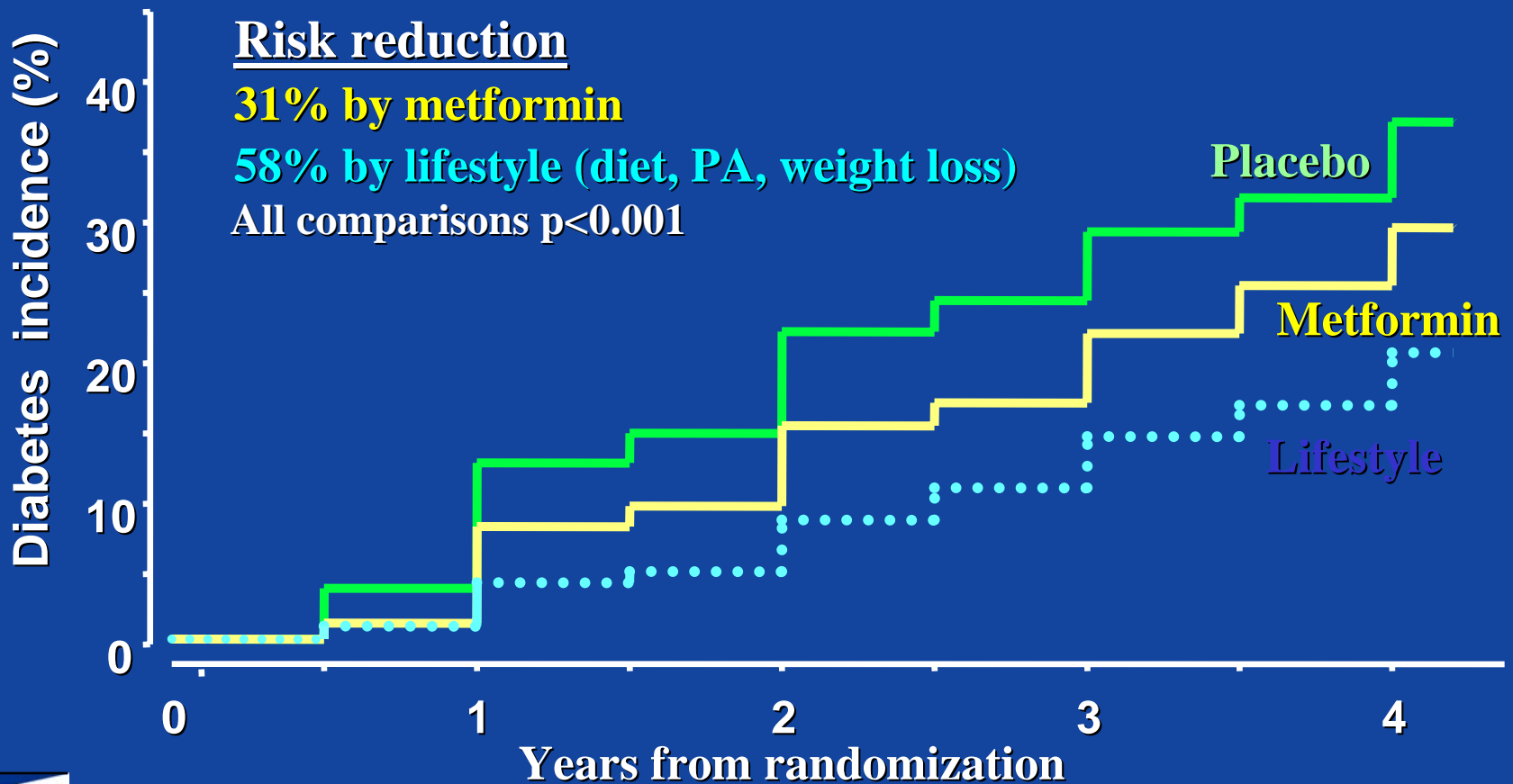
Lifestyle intervention reduces weight in overweight/obese pre-diabetic persons

Diabetes Prevention Program (DPP), 3,234 pts



Lifestyle intervention prevents diabetes in persons with impaired glucose tolerance

Diabetes Prevention Program (DPP), 3,234 ppts w/ IGT



Cost-Effectiveness of Diabetes Prevention Project Interventions

Lifetime Impaired Glucose Tolerance Intervention: Simulated Economic Outcomes in the Diabetes Prevention Program Cohort

Outcome	Lifestyle	Metformin	Placebo
Lifetime intervention costs, \$	9,718	8,801	2,907
Lifetime outcome costs, \$	42,256	46,460	48,432
Total lifetime costs, \$	51,974	55,261	51,339

Aetna Clinical Policy Bulletin: Weight Reduction Medications and Programs

- “Aetna considers the following medically necessary when criteria are met:”
 - Weight reduction medications, *and*
 - Physician supervision of weight reduction programs.

Aetna Clinical Policy Bulletin:

Weight Reduction Medications and Programs

The following medications have been approved by the FDA for weight reduction:

- Phendimetrazine; phentermine; diethylpropion;
- Mazindol; benzphetamine; sibutramine;
- orlistat

The following services and supplies for weight reduction are specifically excluded from coverage:

- Psychiatric treatment for weight loss, including behavior modification, biofeedback, counseling (individual or group), hypnosis, etc.
- Exercise programs or use of exercise equipment.

Characteristics of adoptable interventions:

- persuasively effective
- can be delivered and disseminated with fidelity
- economically feasible

Jones and West

- Unselected patients – all were enrolled;
High ‘external validity’
- No psychological or behavioral diagnosis to guide the special treatment arm
- Non-specific, inadequate intervention
- Misleading indication of potential effectiveness

Comparison of psychoeducational and statin trials for CHD Patients

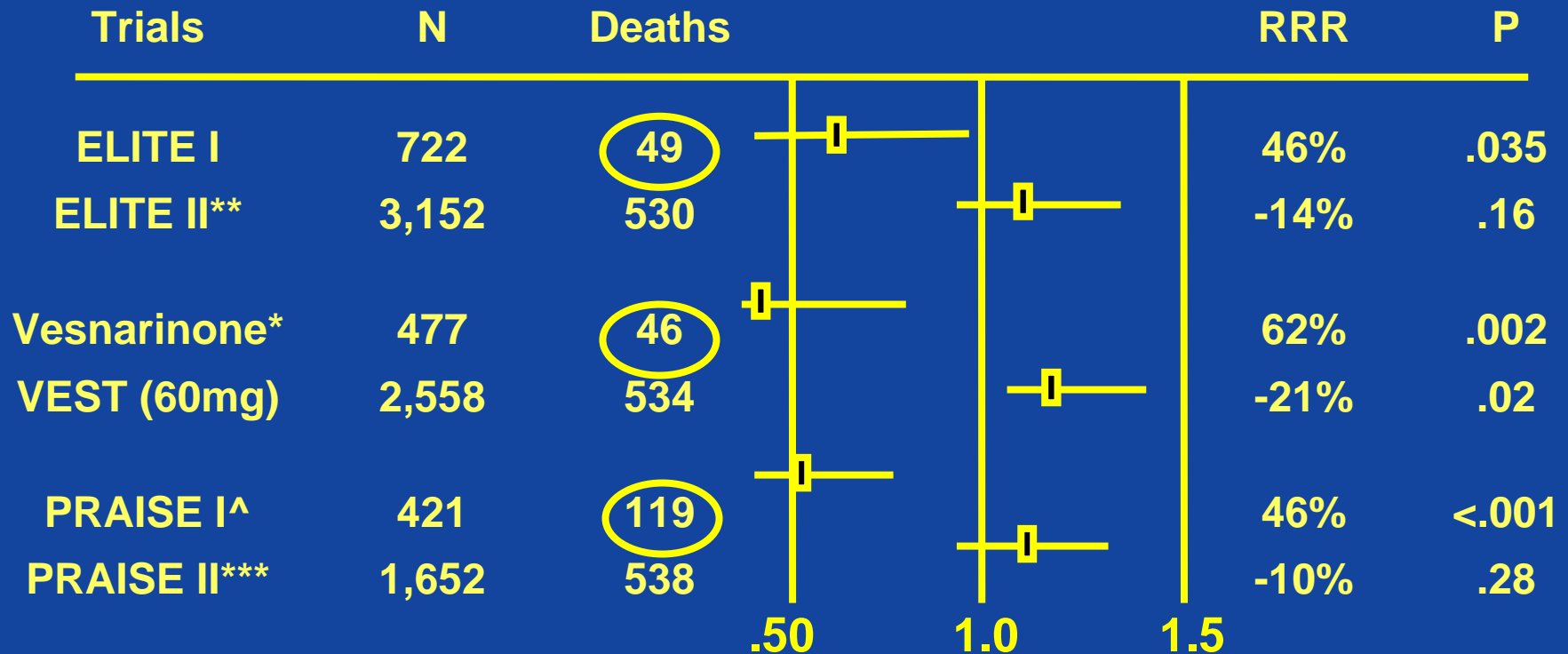
Number of “Psychoeducational” CHD trials:	37
Randomized trials:	76%
Mean sample size:	243
Conclusion:	qualified

Dusseldorp et al., Health Psychol., 1999

Number of Statin trials for CHD :	100+
Number of “seminal” statin stroke trials:	9
Randomized trials:	100%
Mean sample size:	7,785
Conclusion:	definite

Amarenco and Tonkin, Circulation, 2004

Small Trials in Cardiology are Unreliable: CHF



^ (non-ischemic only)

*Inotrope; **ACE inhib; ***Ca++ block.

Large simple trials

foster more rapid advances

- Majority of therapies act through unknown mechanisms, not specifically targeted
- Investigation of mechanisms, moderators, and mediators within a trial is costly, time consuming, fosters drop-outs, possibly diminishes effect size
- Large sample sizes achieved at low cost promote detection of clinically relevant effects
- Lower costs promote more studies
- Simple trials are more feasible in a broad variety of clinical settings
- All standards of quality for RCTs can be preserved

Randomized Controlled Trials: What Have They Taught Us?

Don't trust observational data, pathophysiologic reasoning or theoretical models as sole sources of evidence

Interventions must have diagnosable targets, and be of adequate intensity and duration

Trials require replication, and adequate sample size

Exploit biological and genetic factors that modify response to treatment

To be reliable, must preserve methodological rigor

Behavioral Medicine will Advance through Evidence:



...derived from all levels of the bio-behavioral research spectrum, from genes to environment and their interactions.



...that results in effective interventions, that can be disseminated with fidelity, and are economically feasible.



...with replication of results.

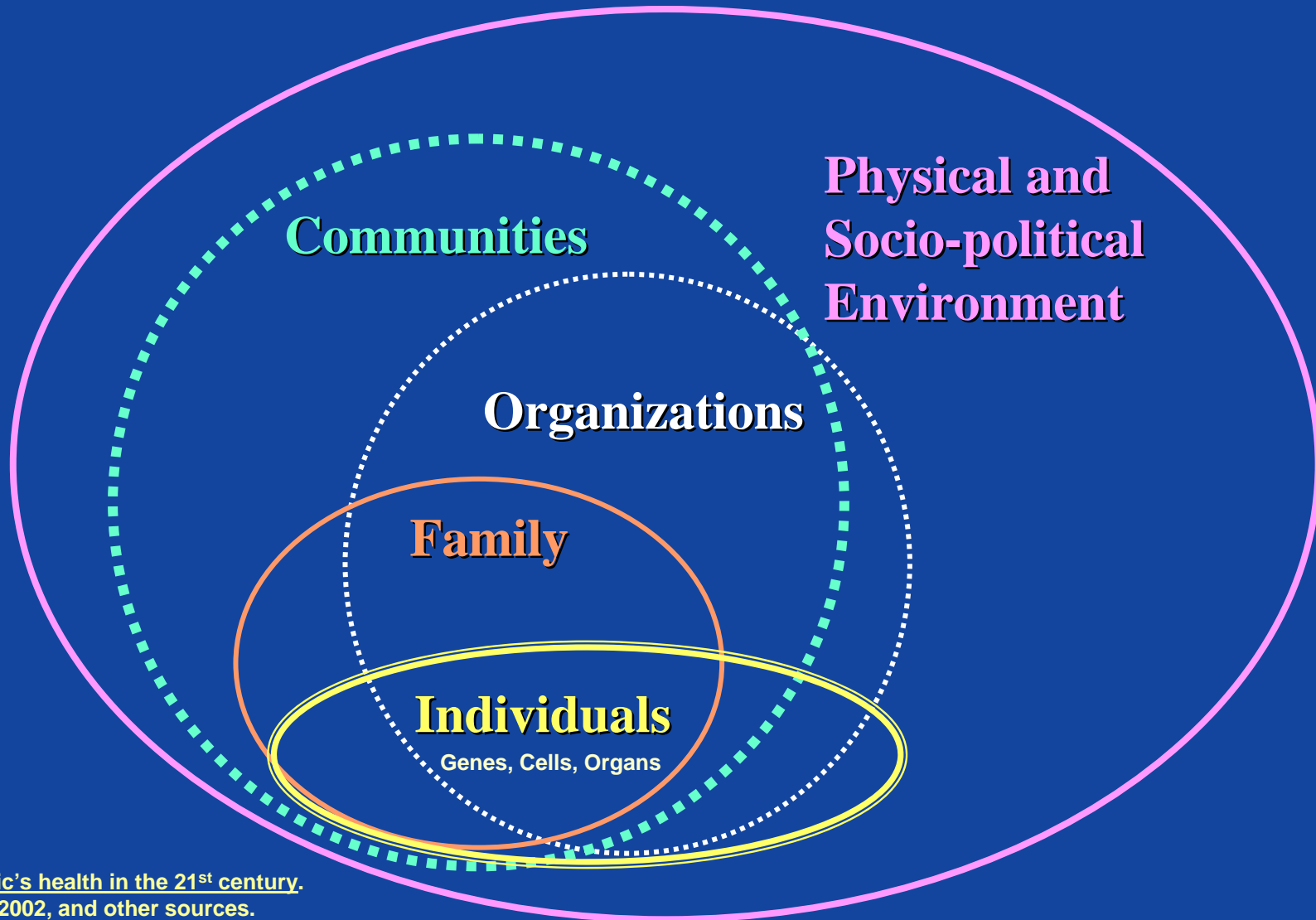


...that includes large, simple trials as a legitimate research design.



...that quality of care can be assured through development of appropriate delivery systems.

RCTs are versatile



Adapted from:
The future of the public's health in the 21st century.
Institute Of Medicine, 2002, and other sources.

Behavioral Medicine will meet its mission through randomized controlled trials :

- Adequately powered
- Well-characterized patients
- Well-designed interventions
- Clinically meaningful end-points
- High quality implementation
- Appropriately analyzed

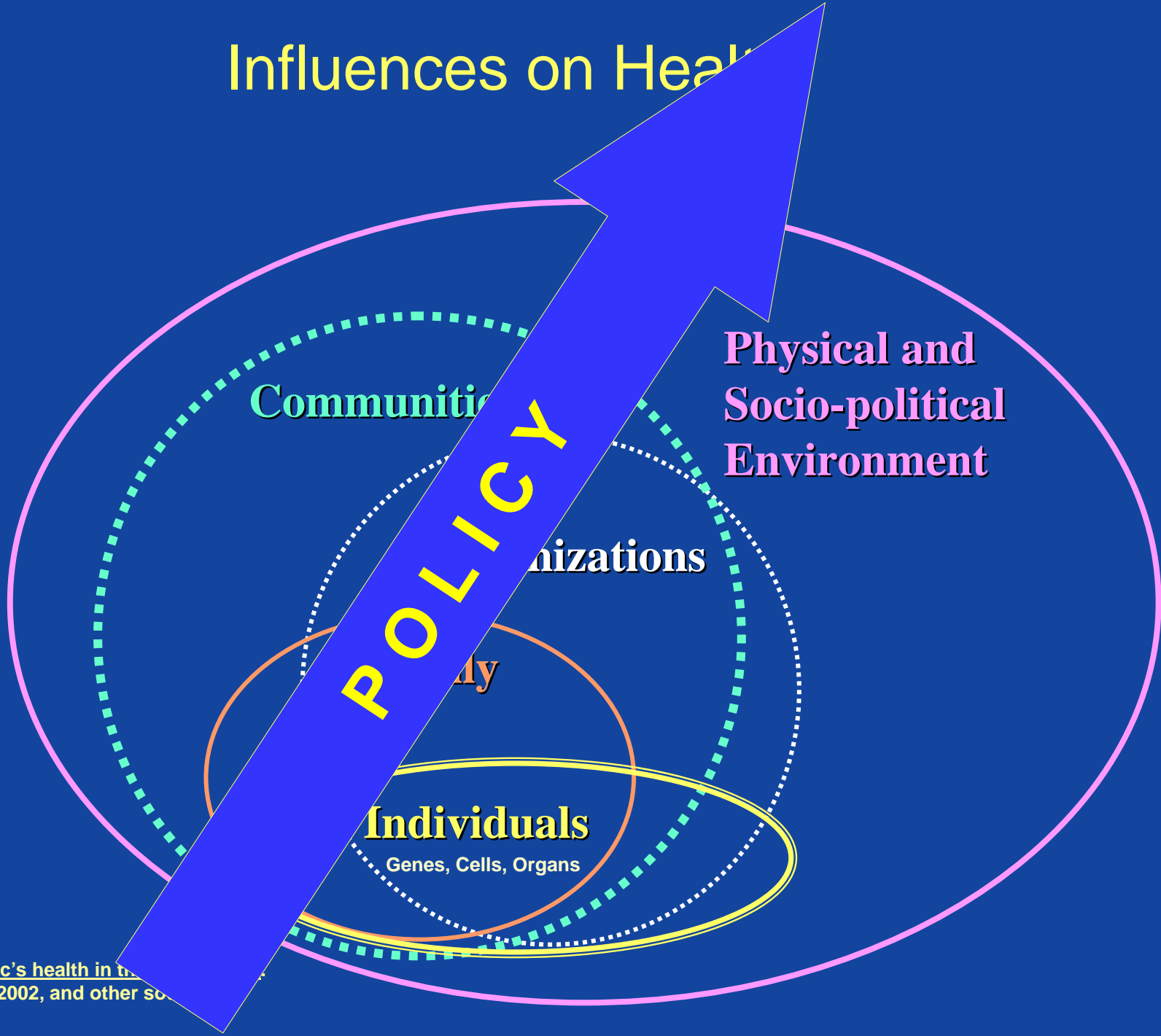
USPSTF:

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Avoid interventions not supported by evidence... at any level of the ecological framework

- **“Scared Straight”** – all the rage after initial reports from Rahway suggested reduced crime rates... increased crime rates in target participants
- **“Boot Camps”** – at one time, 500 youth participated daily in Georgia alone... increased crime rates
- **School-level interventions for obesity** – intervention content and efficacy remain to be demonstrated
- **Treatment of depression post-MI** – may not improve survival

Influences on Health



Adapted from:

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Influences on health

POLICY

Organizations

**Scientific and professional societies
can assure:**

Quality of training

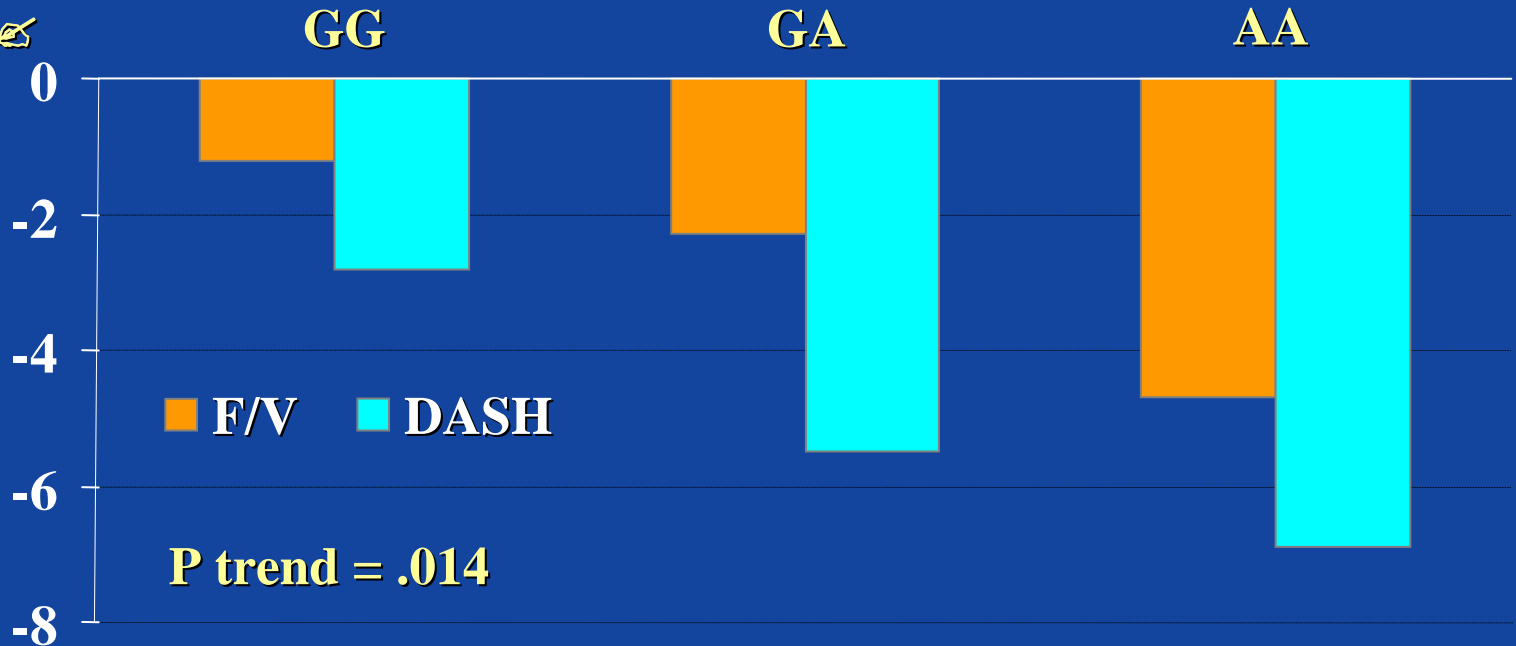
Quality assurance of delivery

Development of delivery systems

Diet Works Best in People with Predisposing Genes

Angiotensinogen
Genotype ↗

SBP
change
net of
control
(mm Hg)



(Svetkey et al., *J Hypertension*, 2001)

Are we in a zero-sum game?

- Zero-sum game: a situation in which one parties' gain or loss is balanced by the losses or gains of the other parties.
- NIH convenes more than 150 study sections, of which more than 40 are behaviorally oriented.
- Study at all levels, from basic science to community and systems, are given fair review.



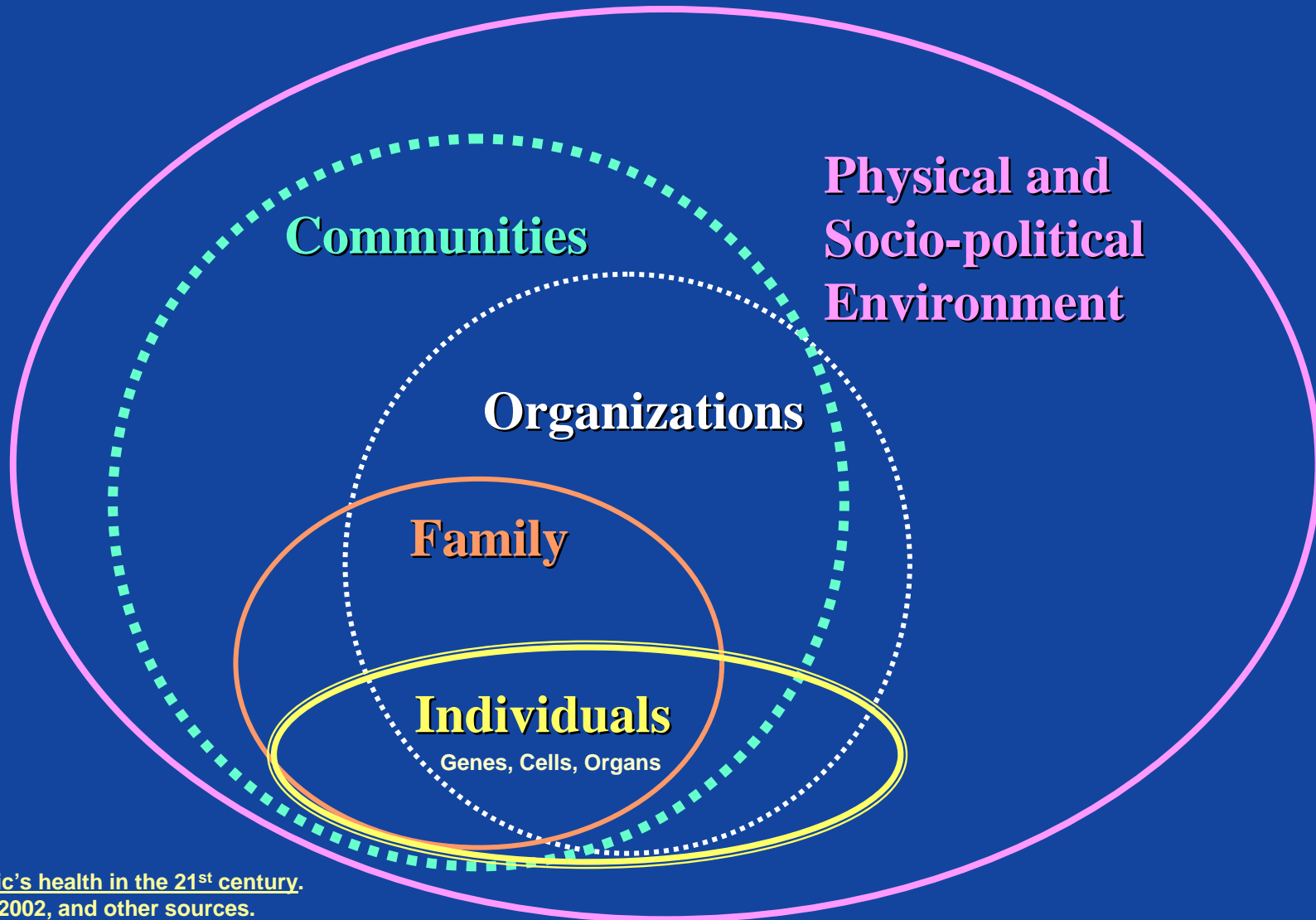
"This meeting was called in order to discuss the meat. It has been pointed out that there is no more meat. A motion has been made to fight over the bones."

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Influences on Health

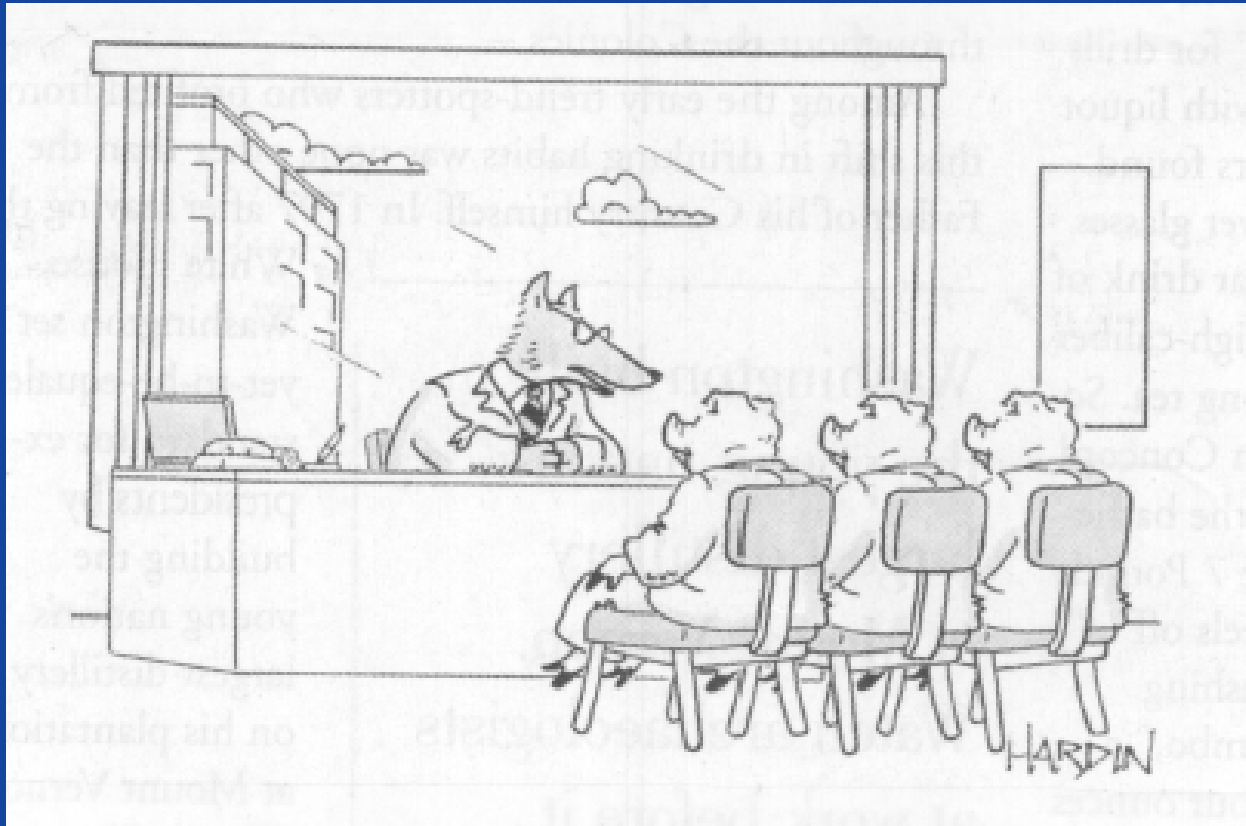


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In God We Trust



**The Rest Must Have
Data**



“You could put it all into bricks, but I recommend diversifying your investment to include sticks and straw as a hedge.”