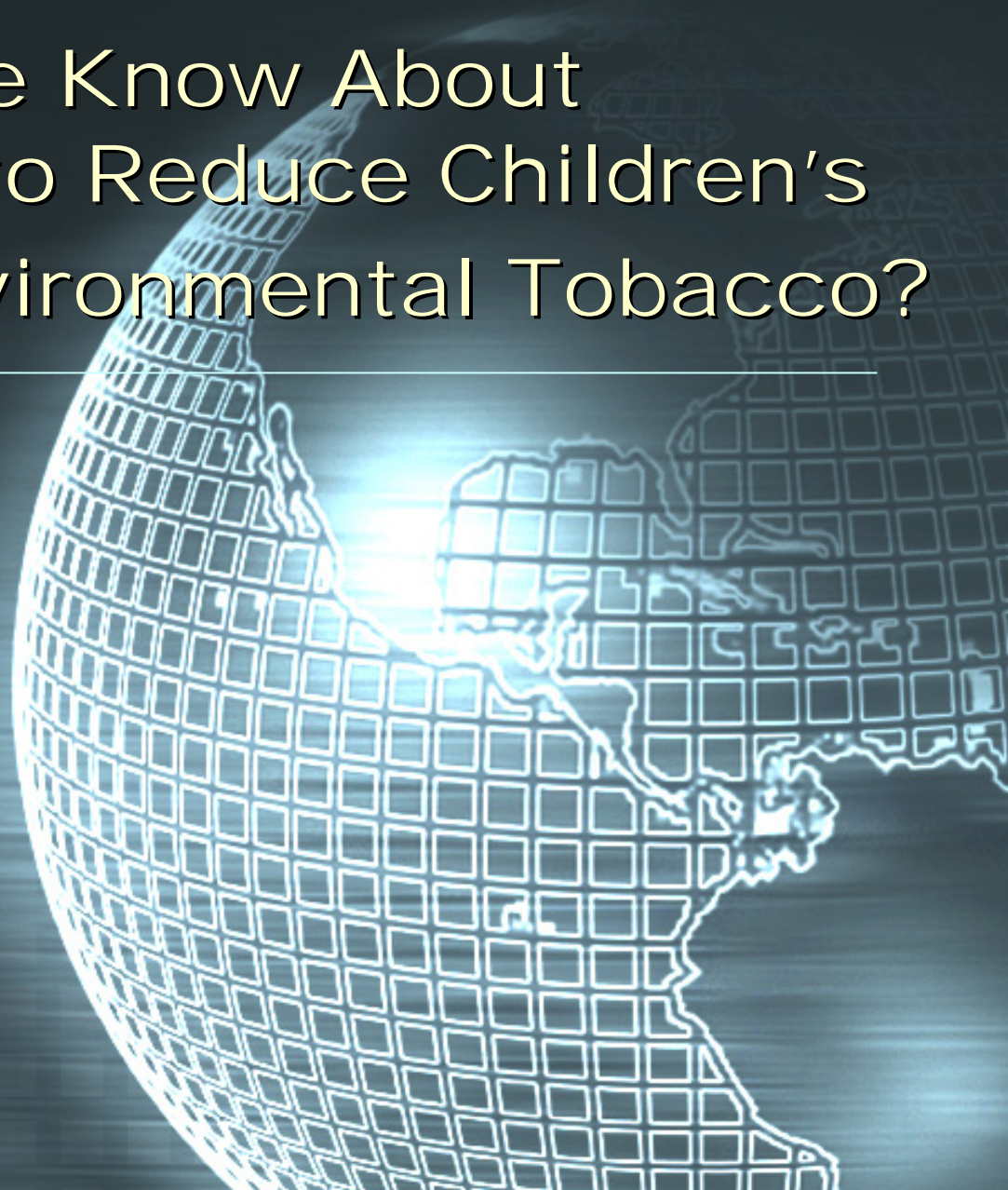


What We Know About Interventions to Reduce Children's Exposure to Environmental Tobacco?

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2/07



The Behavioral Ecological Model



- **Based on Biology/Ecology**
 - Selection of Species
 - Selection of Behavior
 - Principles of Learning Across All Animal Species
 - Emphasizes **Environment Determinants**
- **Based on Principles of Learning**
 - Contingencies of Reinforcement—incentives or rewards
 - Especially Hierarchical & interacting contingencies
 - **Motivating operations/Moderating Factors**

HIERARCHY OF CONTINGENCIES

-
- Society Contingencies**
 - Nationality
 - Culture specific
 - Community Contingencies**
 - Policies
 - Laws
 - Media
 - Local Network**
 - Community
 - Co-workers
 - **Clin. services**
 - Edu. services
 - Individual**
 - Physical
 - Family

Moderating
or
Motivating
Operations

Generic

Bi-Directional
Influence

Highly Individualized
or Specific

BEM Hypotheses



- Density of reinforcing contingencies predicts behavior in individuals and **populations**
- Density of competing contingencies **moderates** the reinforcing function of support contingencies
- To change and sustain health behavior it is **necessary to engineer cultural contingencies supporting target behavior**



There is a Doctor in the House

—and it took a
minimum of \$15,000
and 7 years' hard work
and study
to get him there!

PROUDLY he "hangs out his shingle," symbol of his right to engage in the practice of medicine and surgery. But to a doctor it is more than a right: it is a privilege—the privilege of serving mankind, of helping his fellow man to a longer, healthier, and happier life.



According
to a recent
Nationwide
survey:

MORE DOCTORS SMOKE CAMELS THAN ANY OTHER CIGARETTE!

FAMILY physicians, surgeons, diagnosticians, nose and throat specialists, doctors in every branch of medicine... a total of 113,597 doctors... were asked the question: "What cigarette do you smoke?"

And more of them named Camel as their smoke than any other cigarette!

Three independent re-

search groups found this to be a fact.

You see, doctors too smoke for pleasure. That full Camel flavor is just as appealing to a doctor's taste as to yours... that marvelous Camel mildness means just as much to his throat as to yours. Next time, get Camels. Compare them in your "T-Zone" (see right).

THE "T-ZONE" TEST WILL TELL YOU



The "T-Zone"—T for taste and T for throat—is your own proving ground for any cigarette. For only your taste and your throat can decide which cigarette tastes best to you... and how it affects your throat. On the basis of the experience of many, many millions of smokers, we believe Camels will suit your "T-Zone" to a "T."

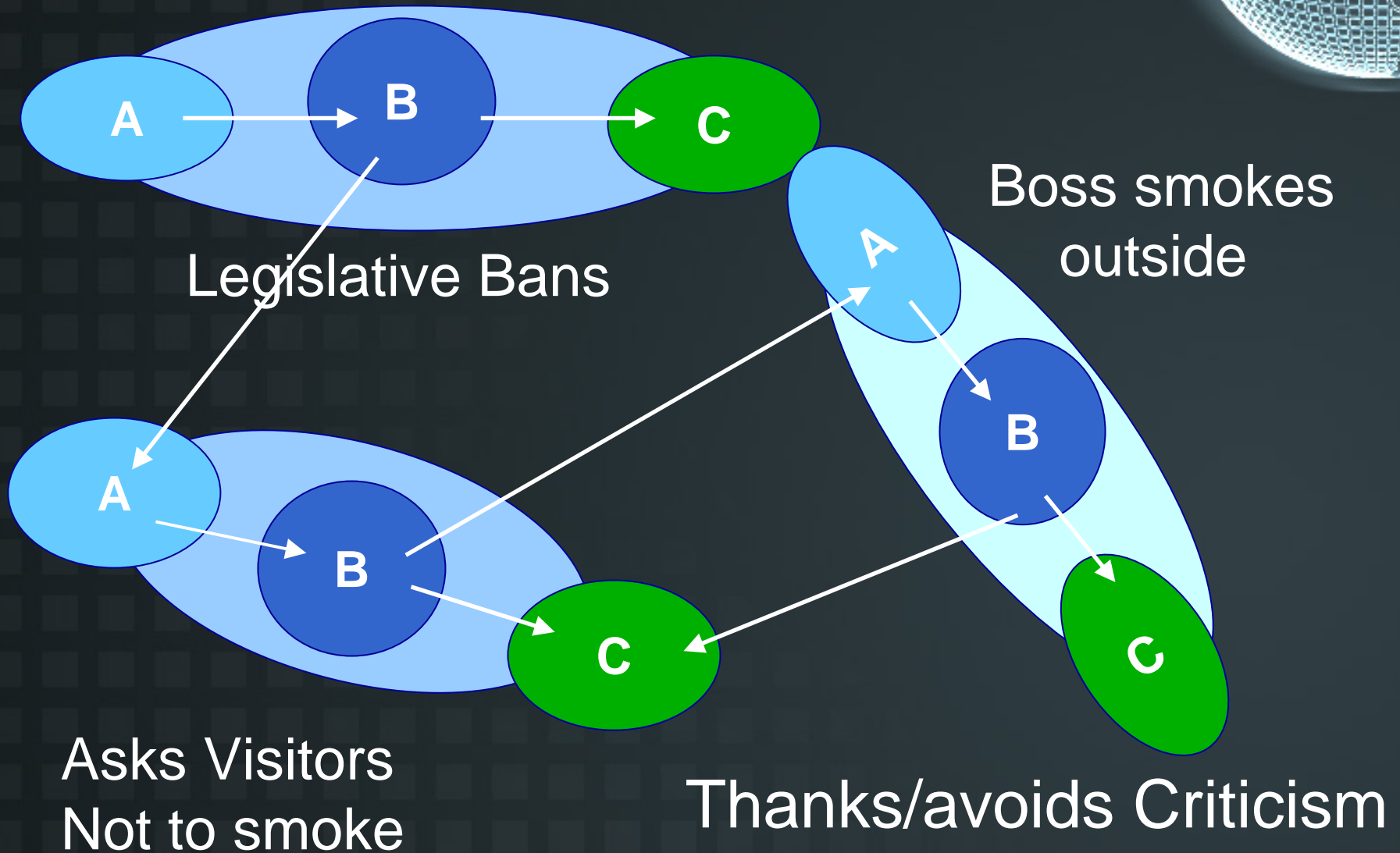
B. & W. Republic Tobacco Co., Winston-Salem, N. C.

CAMELS

Costlier Tobaccos



Cascading & Interacting Contingencies



Cochrane Review of PSE Intervention Trials



A Cochrane Review (Roseby et al., 2004)

12 out of the 18 Trials there was a reduction in PSE in both intervention and control groups **Questioned Efficacy of Counseling**

Similar reviews PSE control have been completed

- Hovell, Wahlgren, Zakarian, & Matt, 2001;
- Gehrman & Hovell, 2003;
- Klerman, 2004

Efficacy depends on

- statistical power
- fidelity
- measurement reactivity
- **and possibly moderating variables**

THE JURY IS OUT

~ The Role of Clinicians ~



- Nonsmoker Models
 - Deliver Tobacco Control Services
- Contract with parents and other family members
 - Address ETS as Lead contamination
- Promote Policies for reimbursement of tobacco control services
- Promote Laws restricting ETS exposure community-wide

CLINICIAN EFFECTIVENESS



- Brief Advice = 5-8% Smoking Cessation;
Limited power and remains to be tested
- Counseling, NRT and Zyban = 20% Cessation;
limited maintenance
- Repeated Advice Can Decrease Youths'
Tobacco Initiation

ETS EXPOSURE CONTROL



Wall et al. 3 Repeated Contacts Increased Smoking Cessation, but;

- Parents Returned to Smoking by 1yr
- Thus, Infrequent Contacts Have Not Reduced ETS Exposure

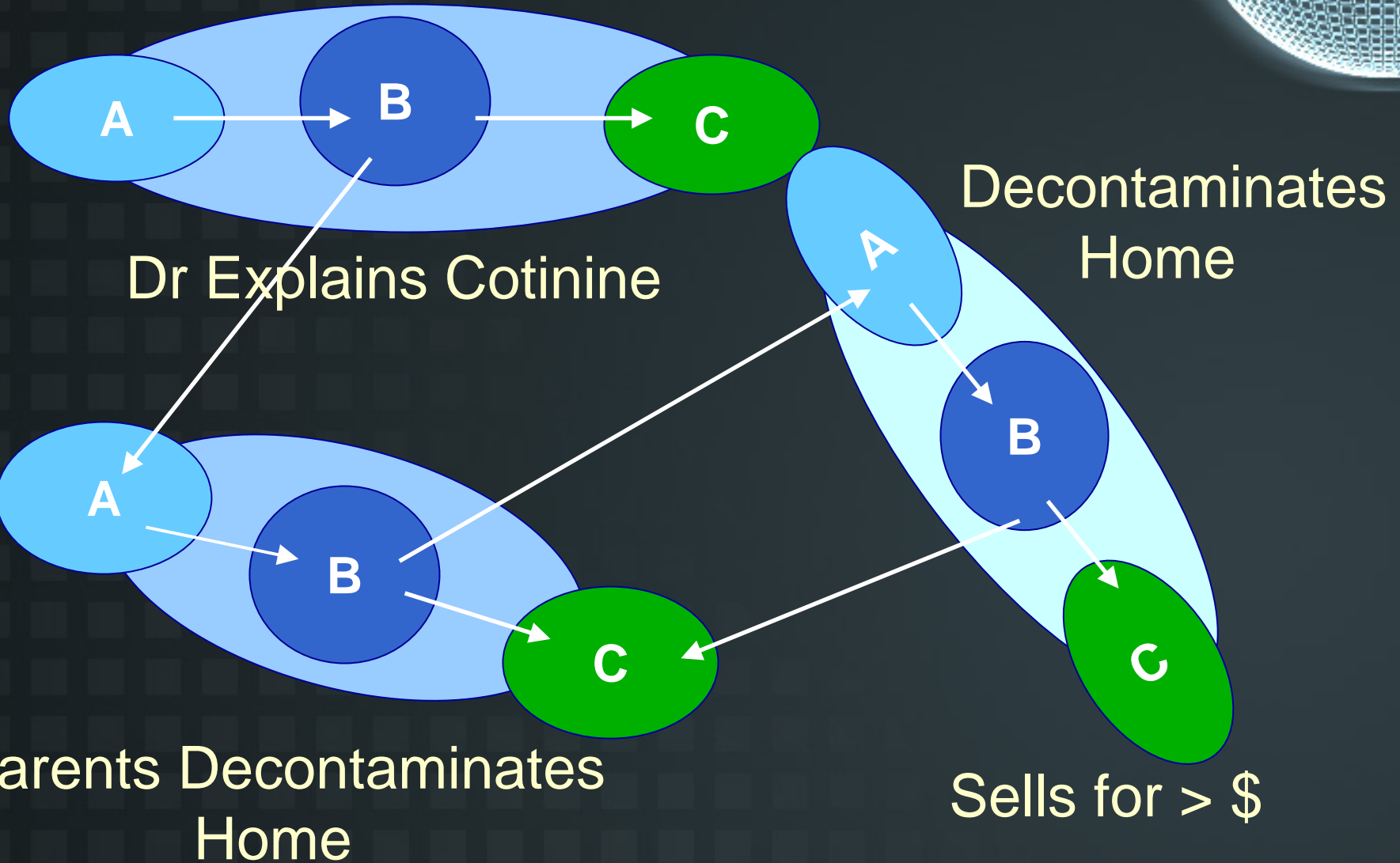
AHA HEALTHY BABIES

Cotinine Feedback to Patients and Pediatricians



- Patients reported cotinine to doctors
- Project PIs reported cotinine to doctors
- Doctors counseled families to quit smoking and protect the child from exposure
- Cotinine feedback to doctors served as a motivating operation to provoke counseling

Cascading & Interacting Contingencies



Policy Implications



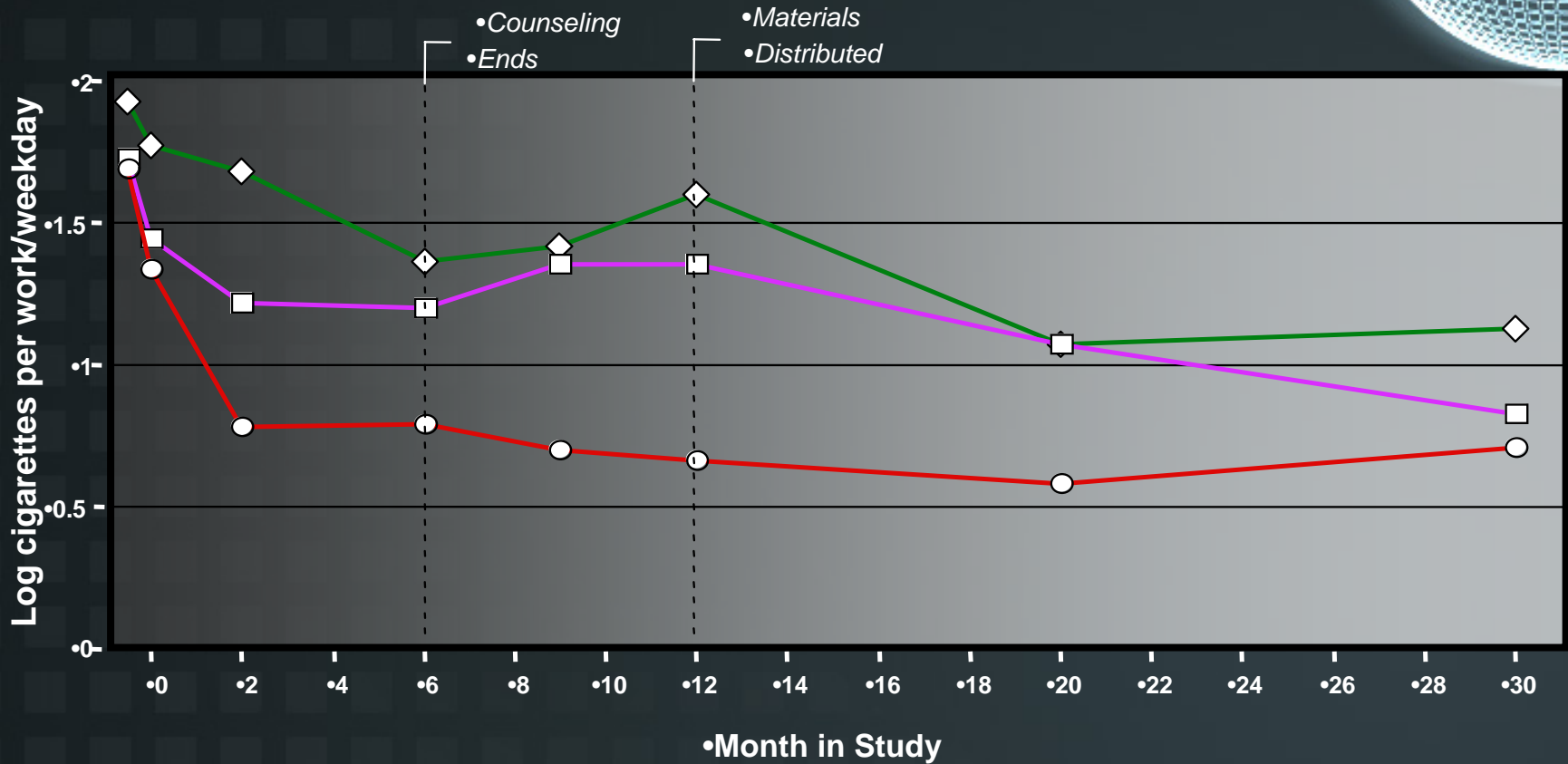
- Health insurance agencies should require and reimburse for cotinine assays
- Policies requiring such coverage should be enacted
- Doing so will provide physicians with routine information about ETS exposure
- Most physicians will “**automatically**” counsel tobacco and ETS control

BEHAVIORAL COUNSELING PROGRAM



- Parents contract to reduce their child's ETS Exposure
 - Short-term goals
 - Self-monitoring
 - Positive feedback
 - Problem-solving brainstorming
 - **Recruitment of social contingencies**
- 4-14 sessions in the home and by phone

Results of Overall Trial*



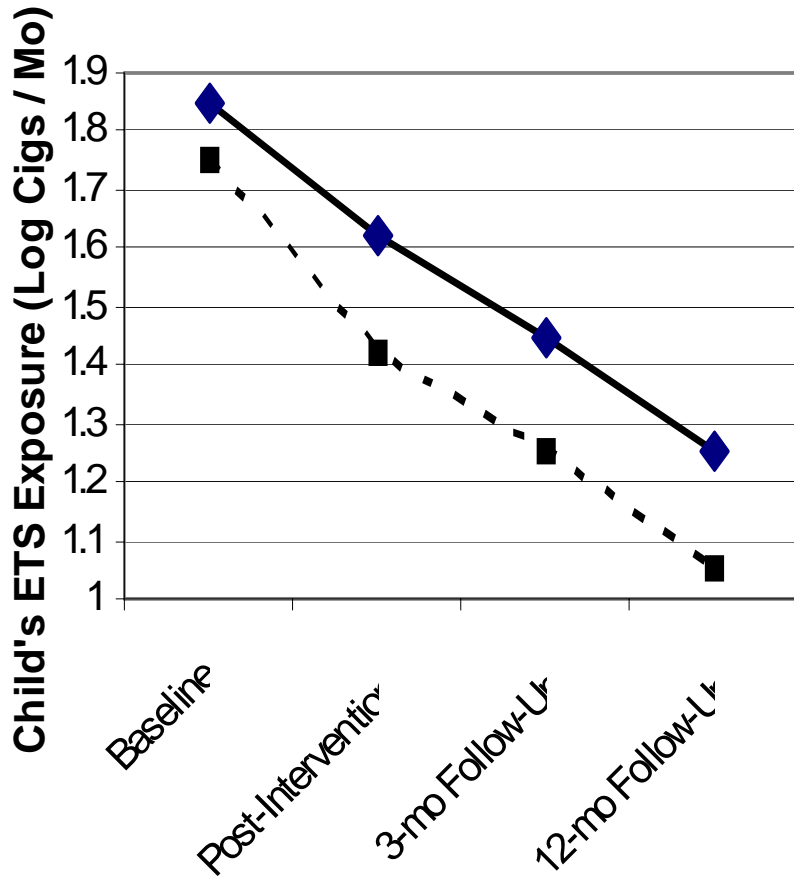
*Published in Chest, 1997;111:81-88

Advances in Measures

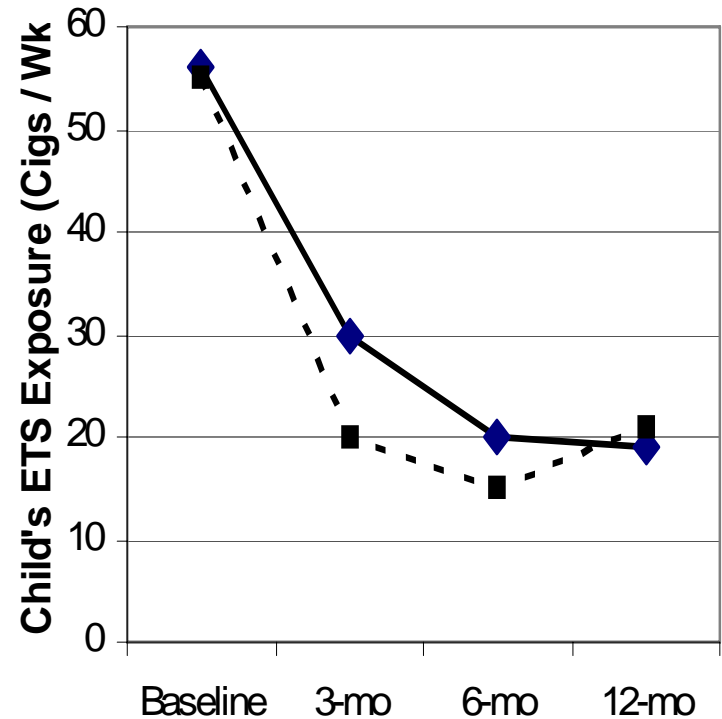


- Enhanced and longer interviews
- Air dosimeter measures of nicotine
- Dust and surface wipes of nicotine
- Urine, blood, saliva or hair cotinine assays
- NNAL and other alkaloid assays
- Repeated at least three times per family
- Stable cotinine estimates may require 3 measures per week...!
- **Collective measures over time function similarly to that of intensive Biofeedback.**

Group x Time Null Outcomes for Reported PSE Change



D Conway et al., 2004



E Zakarian et al., 2004

Are Participants Telling the Truth?



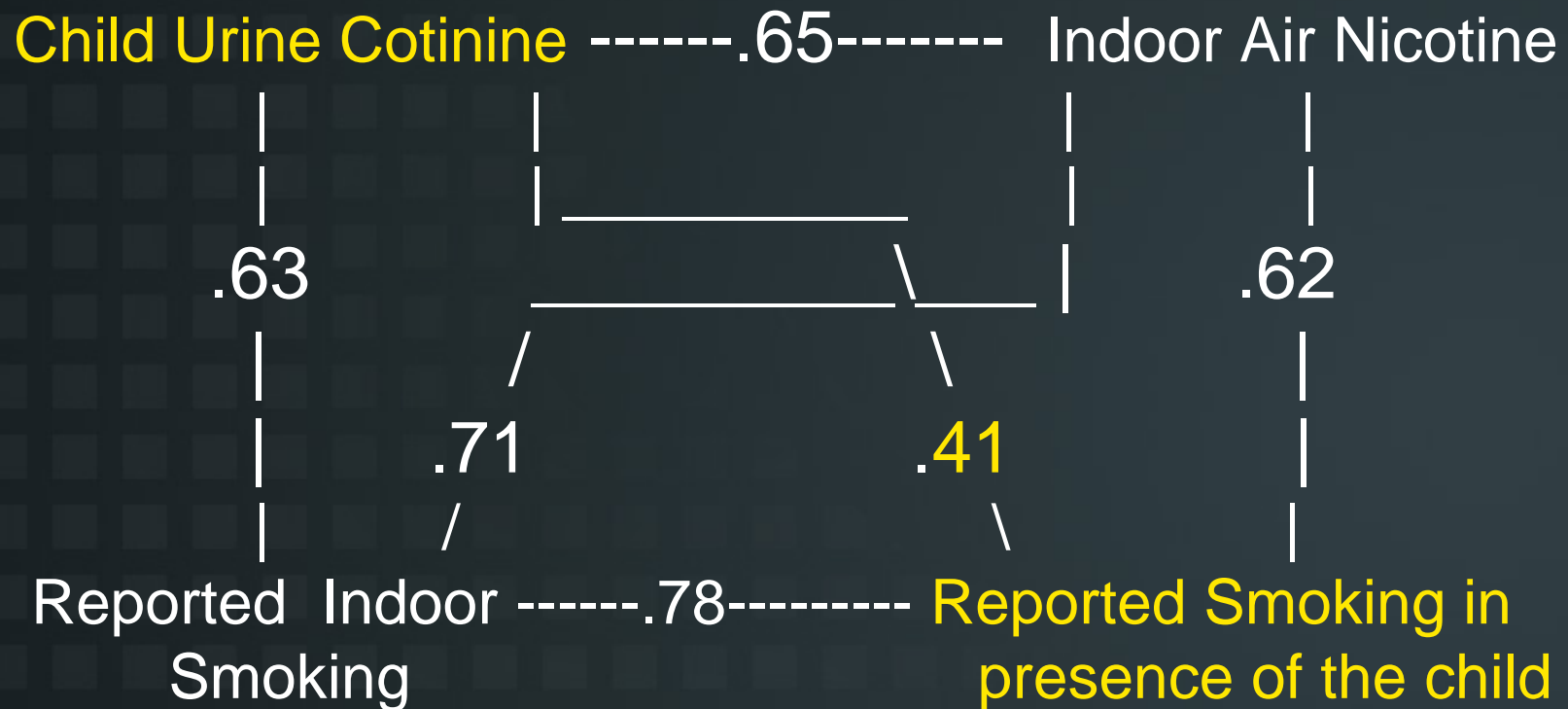
- Families in the control conditions might be exaggerating the degree of reduction in ETS exposure for their child
- Secular trends in California might account for decrease in both control and counseling groups

Cross Validity of Measures



Contamination:

Exposure:



Replications in Other States



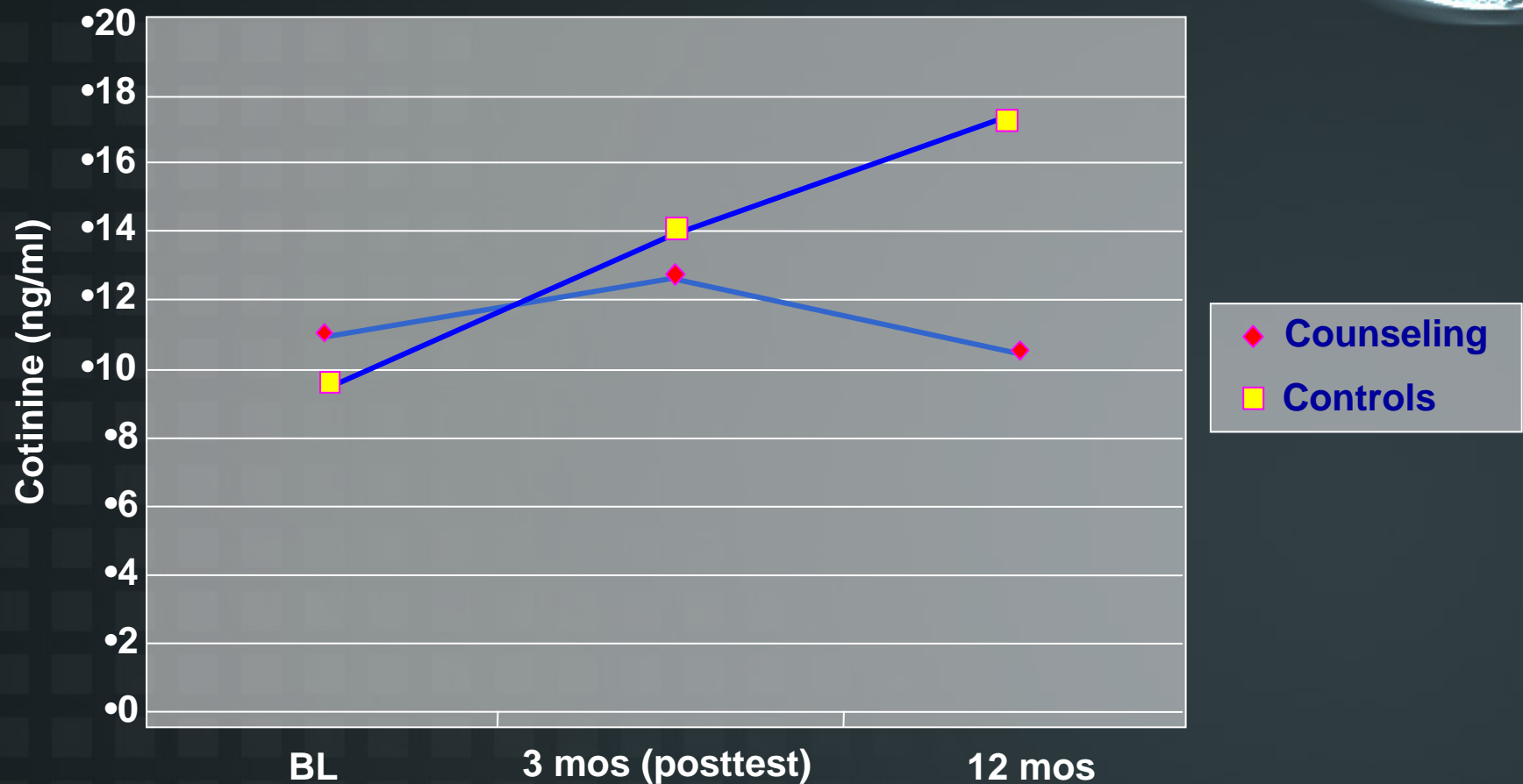
- Klinert et al, Denver Colorado
 - Hennrikus et al. Minnesota, Mn
 - Emmons, et al Boston Mass
 - Others
-
- Aggressive tobacco control does not appear to be the basis for reduction in reported exposure in ETS studies.

Measurement Reactivity



- More intensive measures lead to greater reduction in ETS
- Magnitude of Effects may exceed that of counseling
- Reactivity may mask the likely effects of counseling in controlled trials

Children's Urine Cotinine (NG/ML)



Group by time $p = .008$

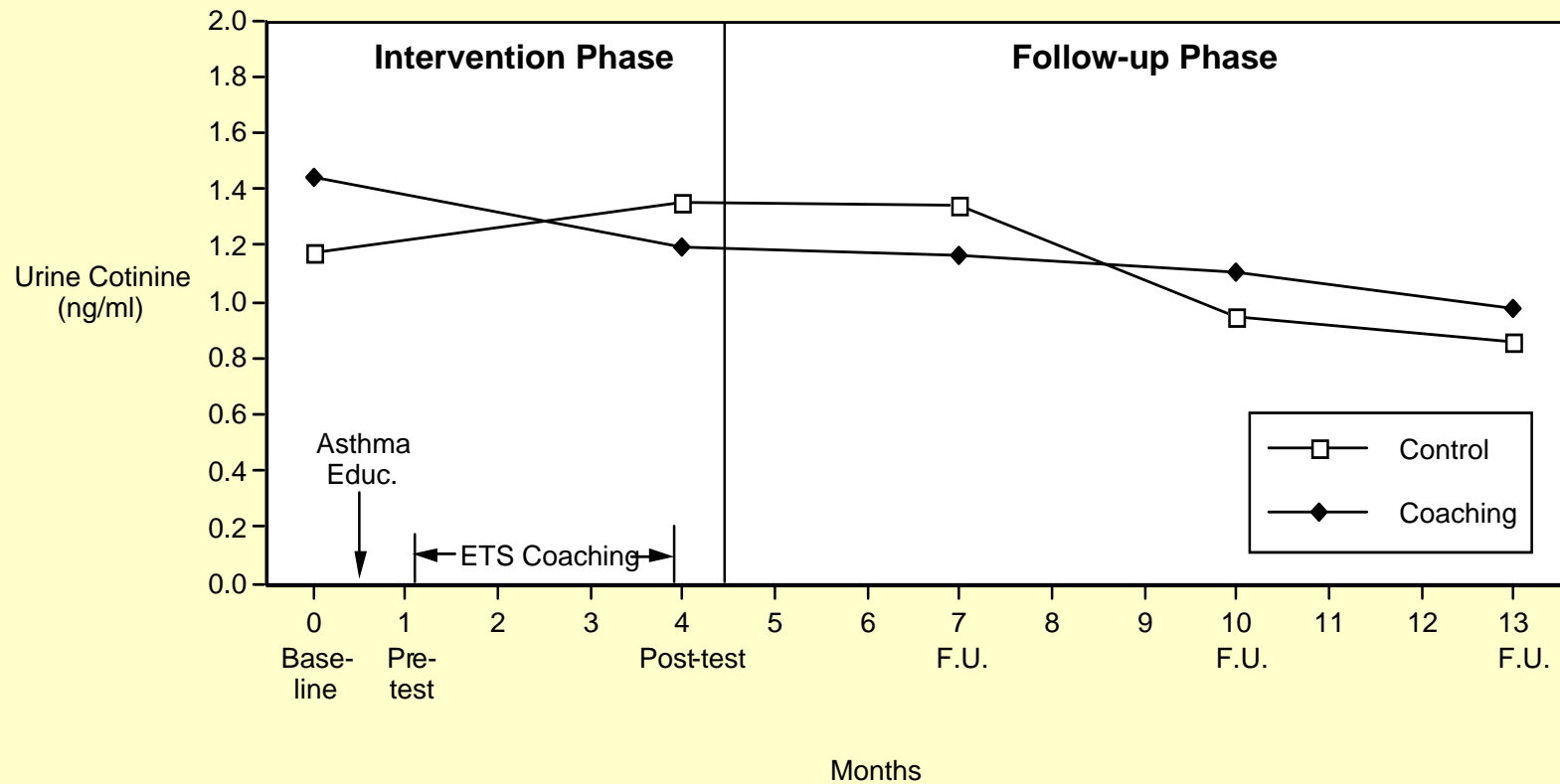
Why would cotinine increase during Counseling & for Controls?



- Reactive depression of exposure at baseline?
- Lagged effects of behavioral change on metabolism?
- **Greater bias** in reporting than for exp group—not likely due to validity measures?
- **Contamination of the home and off-gassing?**

Results: Cotinine

(geometric means)



Intervention Phase

- Group by time (linear) interaction significant ($p < .05$)

Follow-up Phase

- Group by time interaction nonsignificant

Why would controls decrease during follow up?



- Sequential recruitment precludes community confounding events
- Cumulative exposure to measures may be reactive and yield delayed reduction in cotinine?

Medically Compromised Children & Motivating Operations



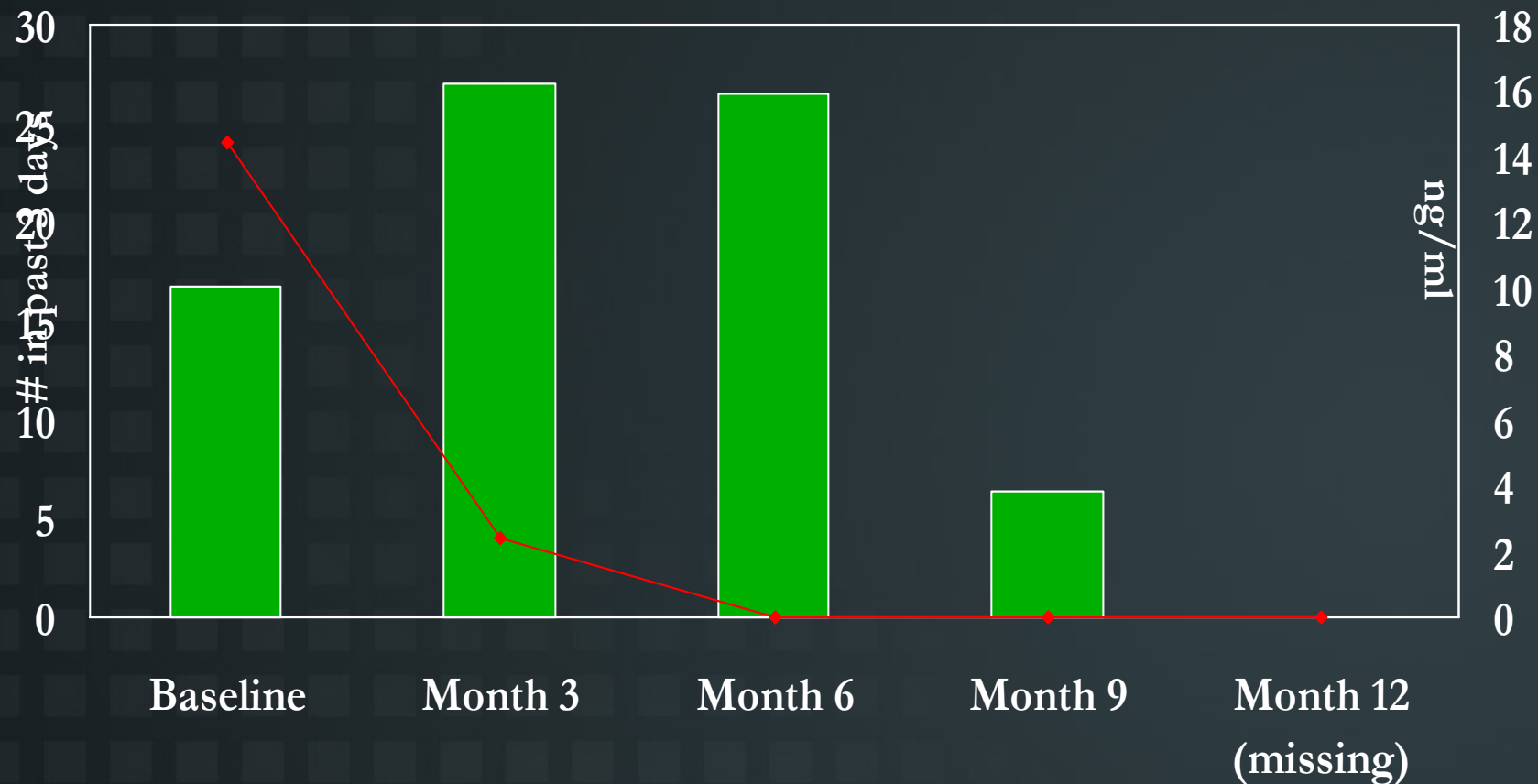
- Asthma
- Cancer
- Cystic Fibrosis
- Diabetes
- Chronic ENT infections
- All other ills?

Family 1 Results - ETS Exposure

Vida Tyk, St Jude's



■ Cotinine level ◆ Cigs exposed

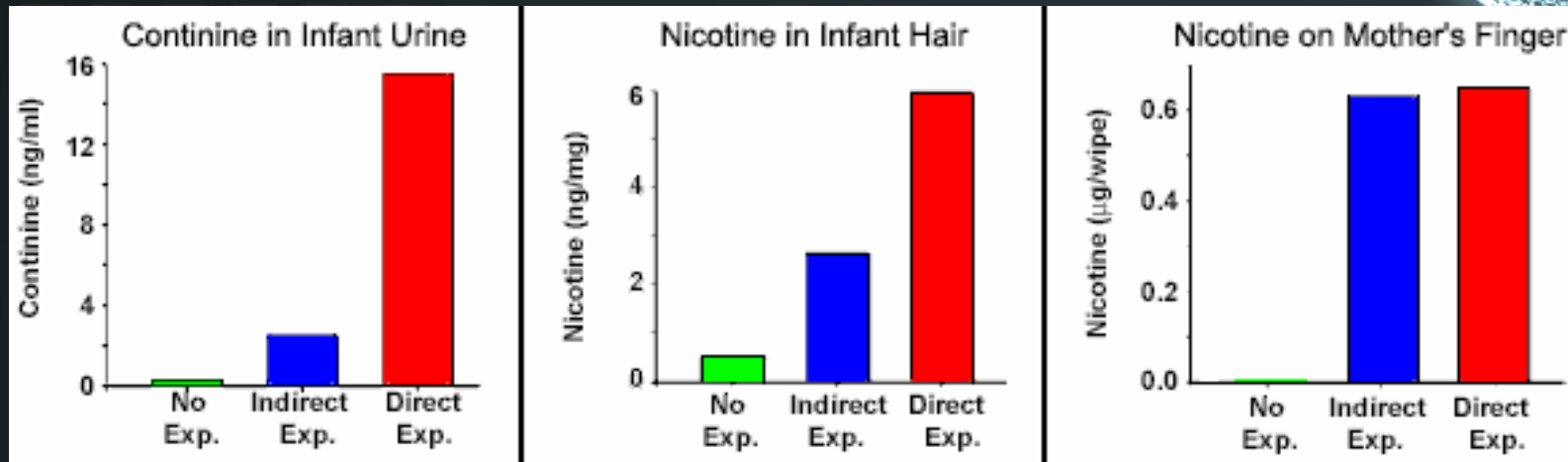





Increase followed by decrease in Cotinine



- Delayed metabolic reaction to decrease exposure?
- Reporting bias
- Delayed effect on home contamination & off gassing?

ETS Exposure in Homes of Smokers and Nonsmokers



-  No Exposure: Nonsmoking Parents, no known exposure of child
-  Indirect: Smoking parents, no indoor smoking at home
-  Direct: Smoking parents, indoor smoking at home

Matt, G.E., et al. (2004). Households contaminated by environmental tobacco smoke: sources of infant exposures. *Tobacco Control*, *13*, 29–37.

Chudler, E.H. (2004). Nicotine, Secondhand Smoke and Infants. Smoking outside the home still exposes infants to nicotine. <http://faculty.washington.edu/chudler/shs.html>.



Home Contamination with Nicotine, Carcinogens & other toxins

- Off gassing of contaminants from smoke may yield ETS exposure even in absence of on-going smoking
- Contamination implies the need for no smoking policies for all homes and cars
- **The Costs of decontamination may moderate addiction contingency for indoor ETS**

Change in Culture Yields Change in Financial Reinforcement



Tobacco Use and Asking Prices in the
Private Party Used Car Market:
Estimating the Value of a Smoke-Free
Used Car

Georg Matt, Mel Hovell et al
In preparation



KBB Value in \$ ¹ Decile \$	Adjusted Asking Price in \$ ²			
	Nonsmoker Car & Seller	Smoker Seller	Smoker Car	Smoker Car & Seller
1 2,067	2,786	2,674	2,640	2,535
2 3,225	3,878	3,724	3,675	3,529
3 4,390	5,008	4,809	4,746	4,557
4 5,631	6,236	5,987	5,910	5,674
5 7,145	7,760	7,450	7,353	7,060
6 9,148	9,806	9,415	9,293	8,922
7 11,762	12,513	12,014	11,859	11,385
8 14,875	15,769	15,139	14,943	14,347
9 20,400	21,573	20,712	20,445	19,628
2003 Av 8,629	9,273	8,903	8,788	8,437
% Loss vs. Referent	Referent	4%	5.2%	9.0%

What We Do & Do Not Know



- Brief counseling has not been adequately tested—larger samples needed
- “Intensive” Counseling can be efficacious
- Feedback to patients & providers might decrease ETS exposure w/o counseling?
- Feedback systems might sustain change?
- Provider brief counseling might augment intensive counseling
- Motivating operations moderate counseling effects.

Women of Algiers in their Room, by Eugene Delacroix, 1834.



Waterpipe Use among the Youth in the Middle East Countries



A young female is smoking the waterpipe in a public pool area in Lebanon.

Soweid, RA. (2005). Lebanon: waterpipe line to youth. *Tobacco Control*, 14(6):363-4.

THE BEHAVIORAL ECOLOGICAL MODEL (BEM)

**A Guide for Worldwide
Health Promotion**

