



Making Recommendations in the Face of Imperfect Evidence

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BMJ 2006

- Similarities between religious views and approaches to scientific evidence
- Fundamentalist \longleftrightarrow Liberal
- Trials Only \longleftrightarrow Variety of evidence

Outline of Talk

- Overview of evidence-based methods
- Implications for policy making
- Illustration of specific issues and examples

Observations

- Policy makers often lack ideal evidence at the time they must make a decision
- Debates over scientific evidence confusing to clinicians and public
- Most debates reflect differences in perspective and values rather than disagreement over evidence
- An explicit and systematic approach to evidence can help separate issue of evidence from those of values

From Atkins D et al. *Health Affairs*, 2005

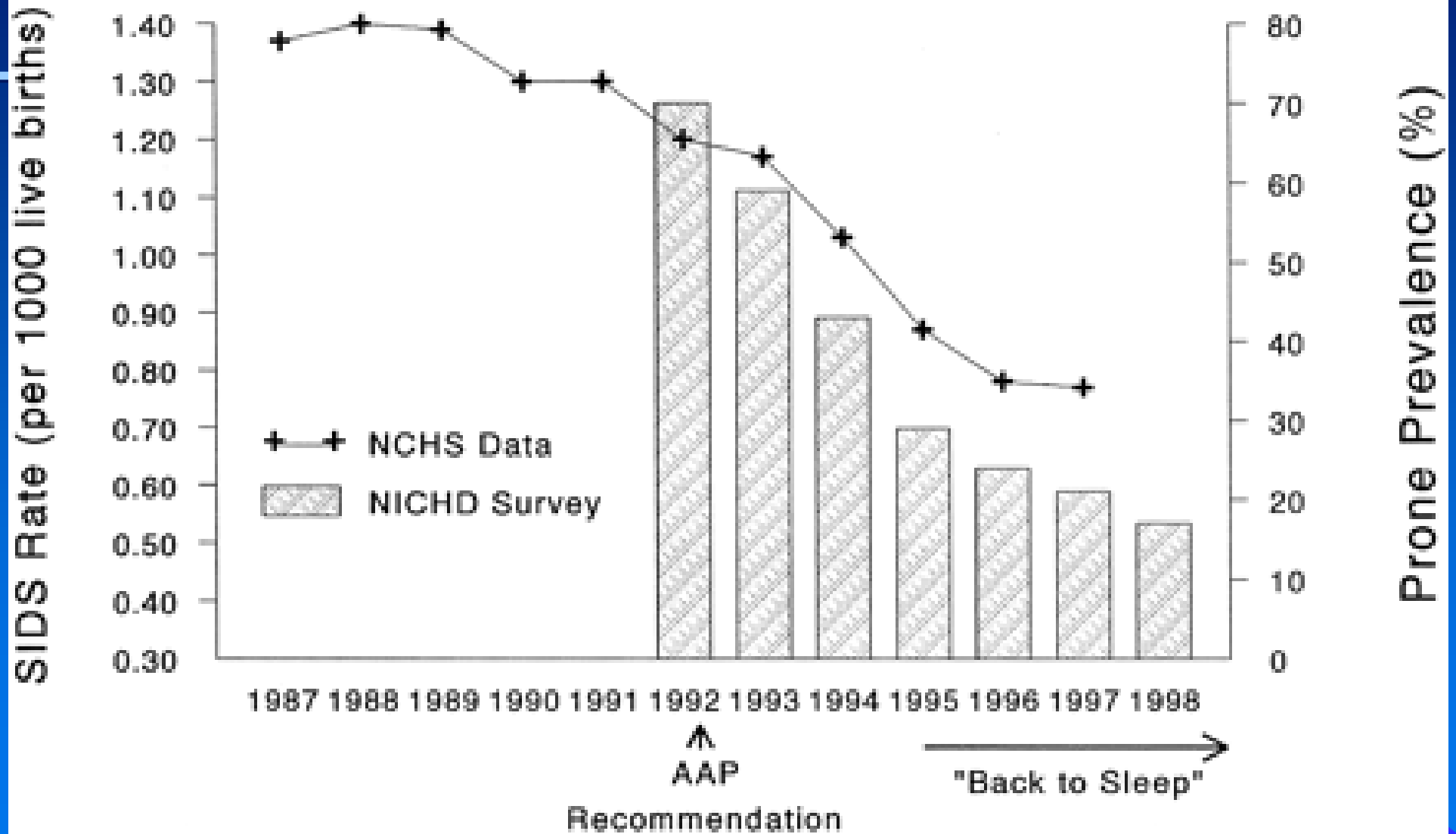
A Tale of Three Examples

- Sleep position and sudden infant death
- Drug-eluting stents
- Postmenopausal hormone therapy

“Back to Sleep”

- Launched in 1992 by AAP
- Evidence based on cohort and case-control studies
- Many studies from non-U.S. settings
- Generally consistent

U.S. SIDS Rate vs Prone Prevalence



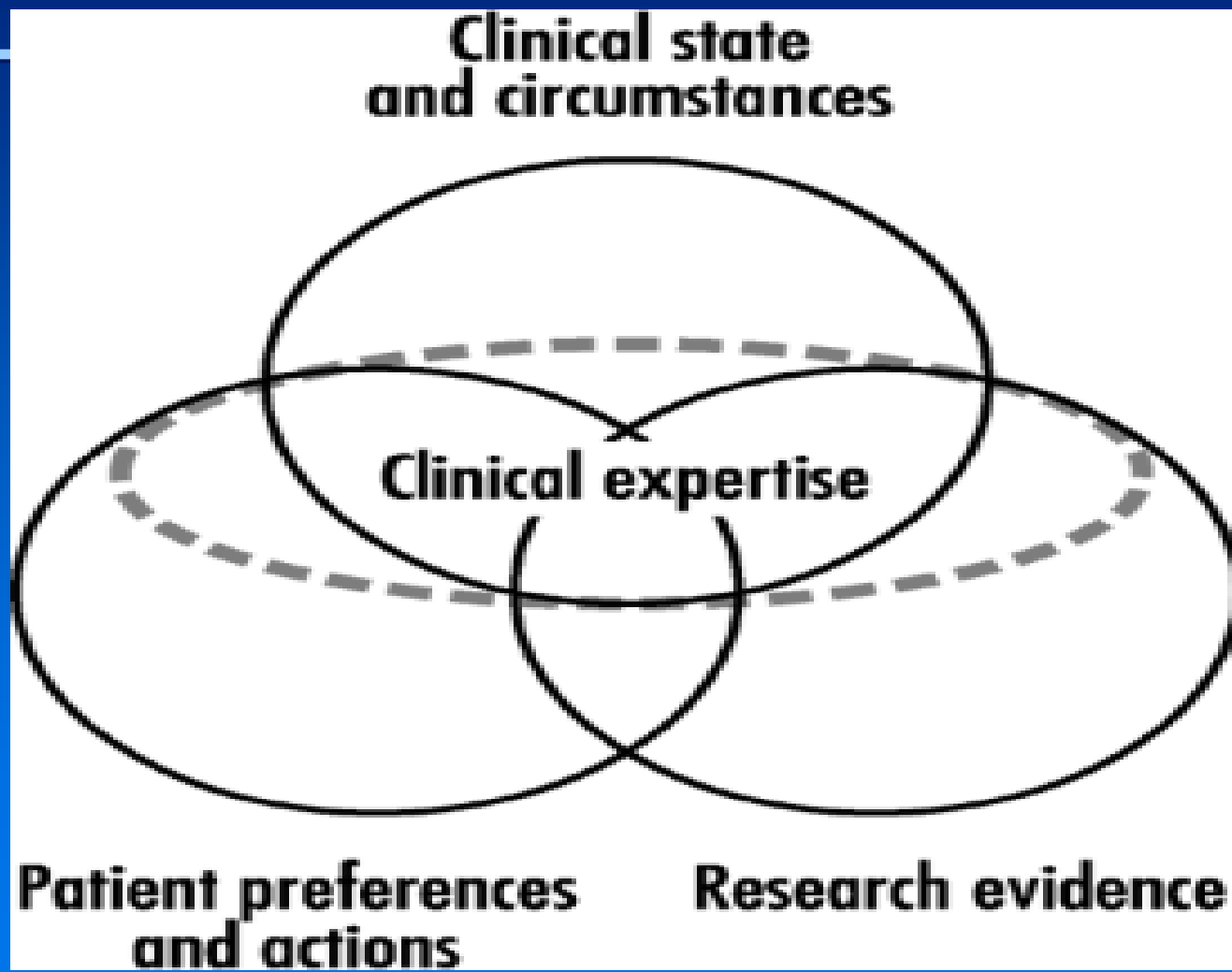
Drug-Eluting Stents

- RCTs:DES reduce early restenosis
- Little long-term data from trials
- Recent registry studies indicate increased risk of thrombosis after one year
- ? Magnitude of effect, role of antithrombotics
- ? Balance of risks and benefits

Misperceptions about Evidence-based Methods

- Overly reliant on RCTs
 - sets unattainable standard for evidence
- Tool to limit health services, save money
- Ignores realities of practice
- Not appropriate for public health
- Not useful when evidence is poor

Evidence Based Medicine



Haynes, Devereaux, and Guyatt. ACP Journal Club 2002;Mar-Apr 136:A11

Evidence-based Health Policy

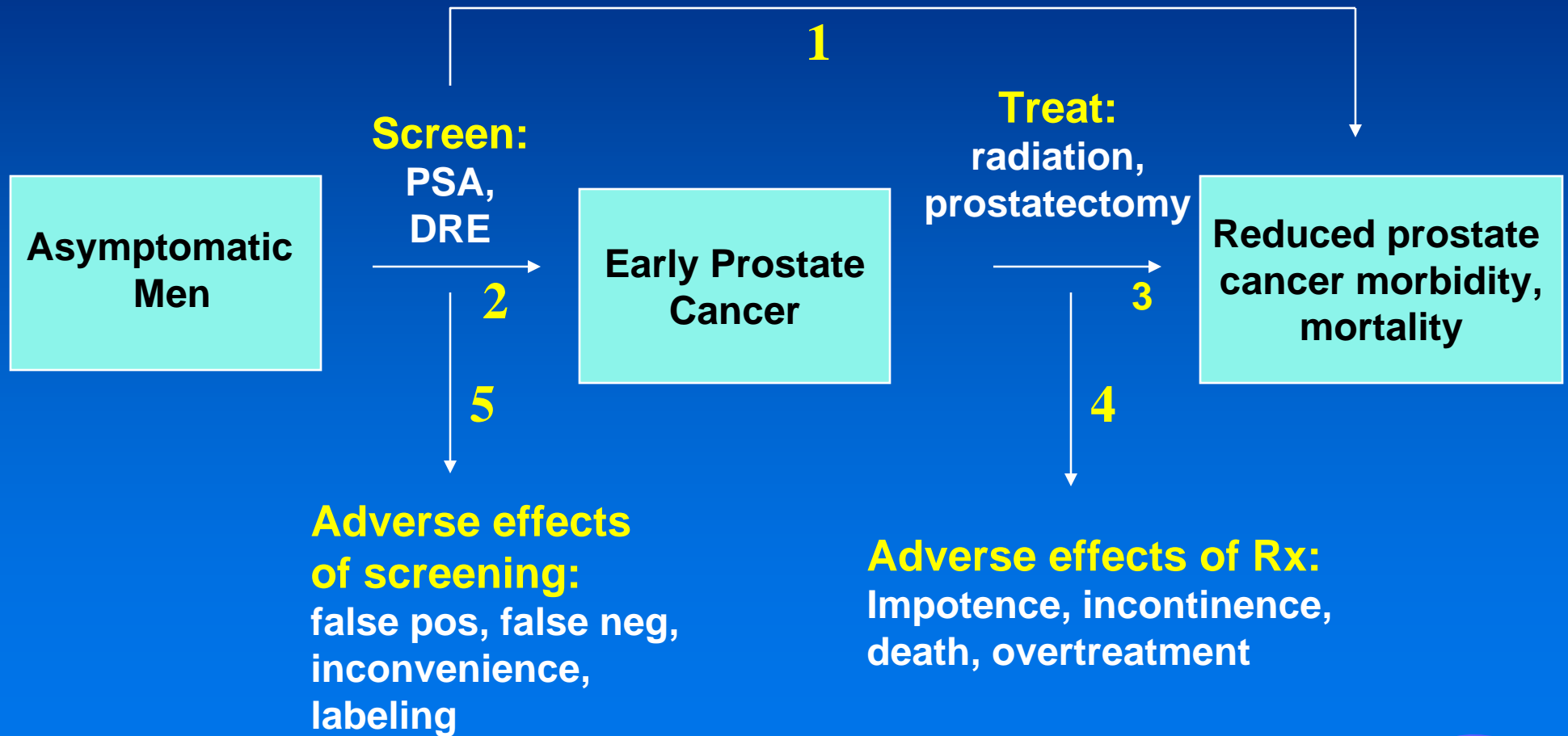


From Muir Gray – *Evidence-based Health Care*

Questions for Setting Policy: A Systematic Process

- What is (are) the outcome(s) I care most about?
- How certain am I that the interventions can improve those outcomes?
- How certain am I that it will work in “real world”?
- How do the potential benefits compare to possible harms and costs?
- How certain do I have to be to make a reasonable decision?
- What other considerations are relevant?

Analytic Framework - 1



2. How good is the evidence that the intervention will improve the outcome?

Systematic review of the evidence:

- Explicit methods, avoid bias
- Distinguish intermediate from clinical outcomes
- Systematic search for relevant studies
- Consistent evaluation of quality of individual studies
- Transparent reasoning, reproducible results

AIM: Distinguish what we know from what we don't

AIM: Facilitate decision making

Dealing with Imperfect Quality

- What are strengths and weaknesses of available studies?
- How do limitations affect conclusions?
 - Could bias explain all the observed effect?
- Can we improve on the current evidence?
- How can results be placed in context?
 - Understanding of disease process

All studies have flaws – some flaws are “fatal”, some are flesh wounds

Challenges of Non-randomized Studies

- Subject to bias and confounding
- No established criteria for good studies
 - Ongoing debate about discordance between RCTs and observational studies
- Consistency does not protect against error
- Can we completely adjust for known confounders?
 - No way to protect against unknown confounding
- Confounding may vary by setting, population

3. Will it work in the real world?

- Carefully controlled research studies may overstate benefits of intervention in practice – “external validity” or applicability
- Patient selection and intervention may alter balance of benefits and harms
 - Quality of intervention
 - Adherent patients

4. Are benefits sufficient to justify possible harms and costs?

- How big are the benefits?
- How to present tradeoffs:
 - Number needed to screen
 - Number needed to treat
- Are there possible harms? Are they important?
- Opportunity costs, resource implications

There are no free lunches

5. What constitutes “good enough” evidence?

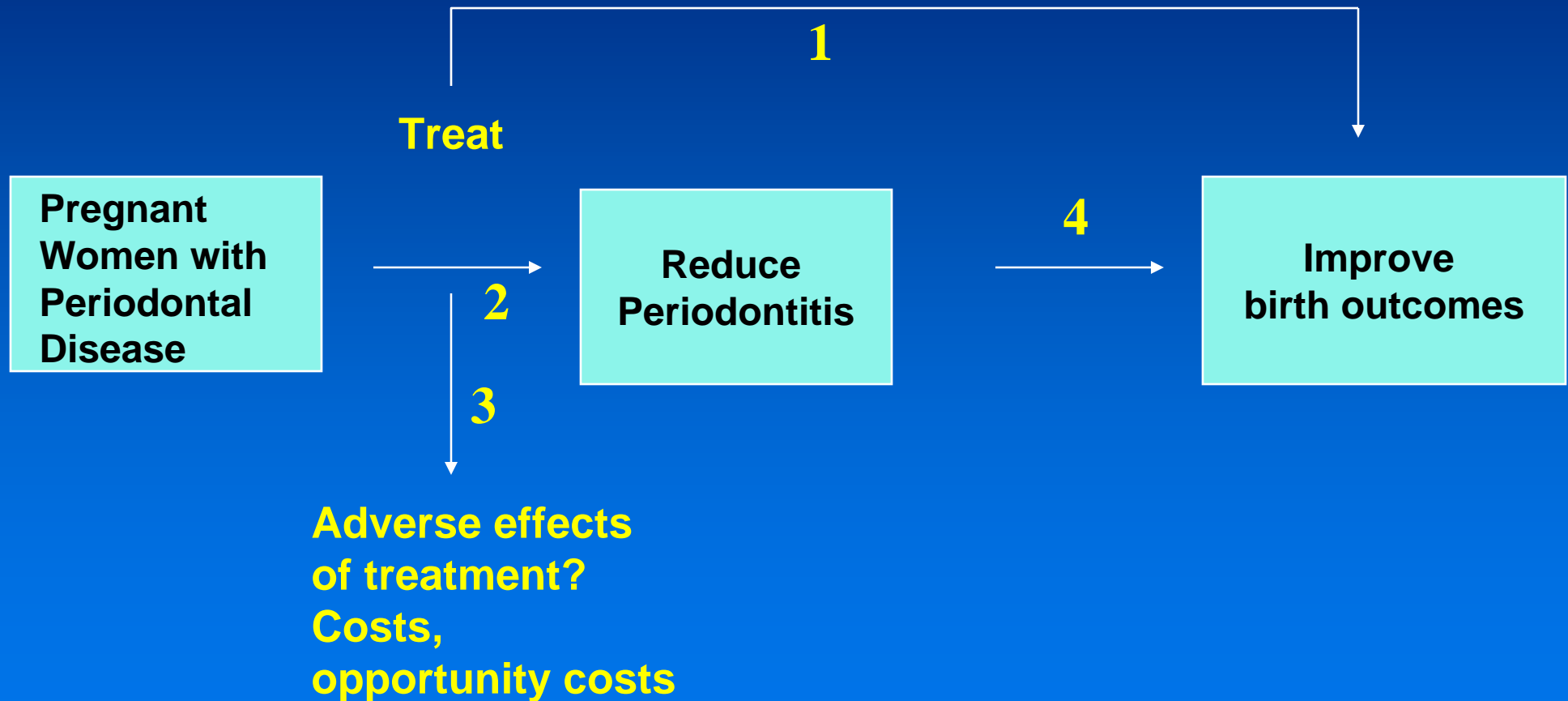
What one considers “good enough” depends on:

- Perspective
 - Individual vs. public health
 - Advocate vs. payer
 - Researcher vs. policy maker
- How you value different outcomes
- Likelihood of getting better evidence
- Judgment of the risks of acting “too soon” or “too late”

6. What other considerations are relevant?

- Equity
- Costs and resources
- Feasibility

Analytic Framework – Use for clinical decisions



Periodontal Health

What Benefits Are Important?

- Pre-term birth
- Birth outcomes
 - Low birth weight
 - Very low birth weight
- Pregnancy loss
- Periodontal disease
 - Short term
 - Long term

Periodontal Disease

What Other Considerations are Relevant?

- Impact of dental care on other prenatal care
- Implications of screening for periodontal disease
- Resource implications
 - Costs of screening and treatment
 - Limited resources to address varied maternal health issues
- Opportunity costs
 - Are there other pregnancy issues where impact might be bigger (e.g. tobacco and alcohol use)?

What do we still need to know?

Implications for research

- Feasibility in practice
 - Screening for disease in different settings
 - Effectiveness of referral
 - Feasibility of intervention
- Effectiveness of treatment in real world
 - Adherence without incentives
 - Effectiveness of typical treatments
- Effects on birth outcomes
- Costs

Periodontal Health

What evidence is “good enough”?

- Risks of waiting for better evidence
 - Missed opportunities to help affected infants
- Risks of acting too soon
 - Divert resources from more effective programs
 - Harm to pregnancy? – No evidence of risk
- How likely is more research to reduce the uncertainty?
- Will we be able to tell if the program works by implementing it?

Policy Options in Face of Uncertainty

- No implementation until definitive studies
 - Repeat large clinical trials, new meta-analyses
 - Efficacy vs. effectiveness trials
- Phased implementation with evidence development
 - Feasibility in broader practice
 - Will non-randomized studies be able to detect benefits if they exist?
- Full implementation on other grounds

“Other grounds” for Acting in Face of Imperfect Evidence

- Intervention is safe and acceptable
- Intervention is affordable and easy to implement
- Addresses major health problem
- Addresses disparities
- Secondary benefits of intervention
- Likelihood of getting better evidence is low

“Other grounds” for Oral Health Care

- Intervention is safe
- Intrinsic benefits of better oral health
- Limited effective interventions to reduce preterm birth
- Addresses important disparities in oral health
- Potential ancillary benefits of increased clinical contact

Reasons to Get Better Evidence Before Large-scale Implementation

- May miss opportunity to truly establish benefit of intervention
- Significant costs, possible opportunity costs
- Feasibility of widespread implementation unknown
- Other unaddressed issues in maternal health



Conclusions

- Explicit approaches useful even when evidence is imperfect
- Distinguish what we know, what we believe, and what we still need to know.
- Separate issues of evidence from issues of values and resources
- Disputes often reflect legitimate differences in the perspectives of the different parties
- Consider risks of acting “too soon” and acting “too late”