

## Using a Socio-Ecological Model to Develop Strategies for Impacting MCAH Outcomes

Geraldine Oliva M.D. , MPH  
Jennifer Rienks, PhD

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## Today's Agenda

- Review emerging paradigms in Public Health
- Overview of traditional public health planning process
- Using a socio-ecological problem analysis framework to identify causal pathways
- Developing strategies to address a problem based on addressing upstream causes and risks
- Identifying evidence based interventions to implement the strategies

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## New Paradigms for Understanding Persistent Disparities

- Emerging evidence that traditional clinical and public health efforts targeting individuals have not impacted health disparities
- Multi-level analysis has demonstrated the significance of social determinants of health in explaining many of these disparities
- Re-emergence of the life course model that emphasizes importance of prevention and intervention along the age spectrum

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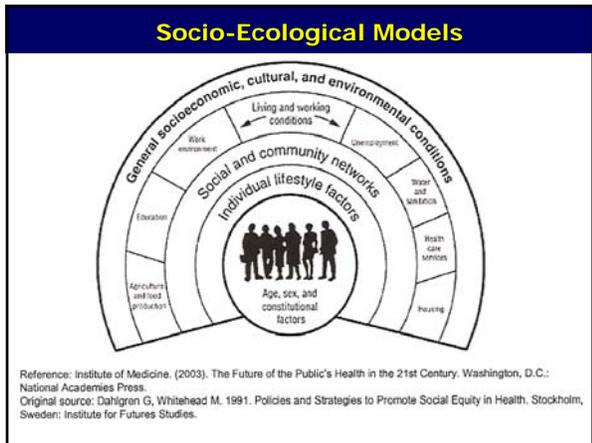
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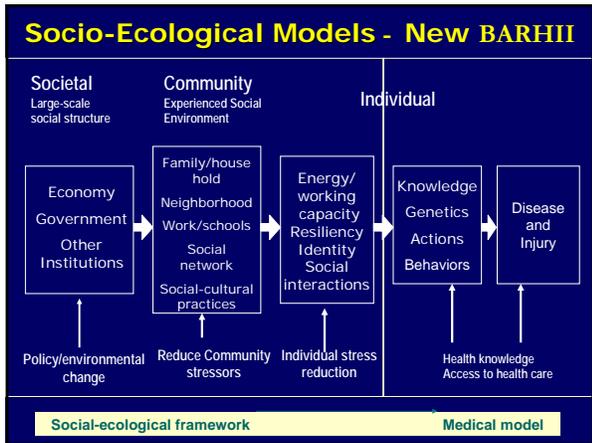
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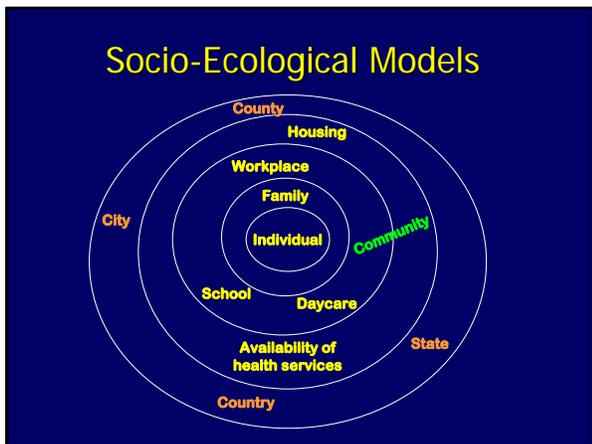
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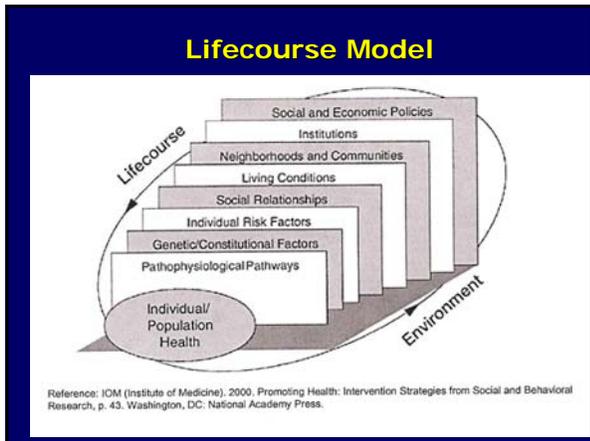
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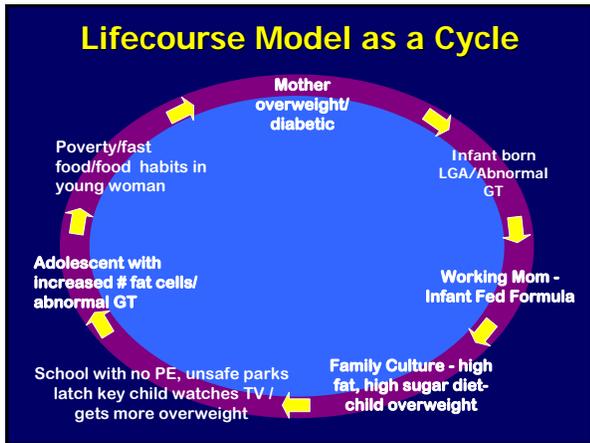
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## How do we Incorporate these New Paradigms into a Community/Public Health Planning Framework ?

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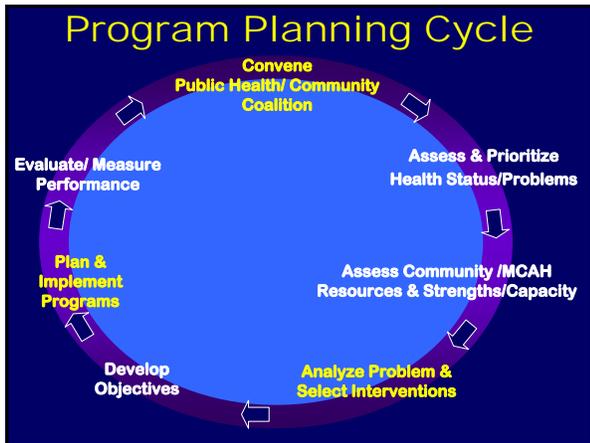
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## Rationale for Doing a Formal Problem Analysis?

- To identify effective intervention strategies, it is necessary to understand the complex array of underlying factors that can impact health outcomes and how factors relate to one another
- Using a multilevel socio-ecological framework ensures that upstream factors are included
- Relating upstream precursors to downstream outcomes forces us to explore the pathways by which upstream factors operate in a specific situation

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## Steps in a Problem Analysis



1. Examine epidemiologic data
2. Examine literature and consult experts
3. Determine extent to which these factors are active in the community

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## Steps in a Problem Analysis

4. Determine relative contribution of each identified factor
5. Identify the interrelationships among factors – causal pathways
6. Determine the most effective points in the causal pathways for intervention

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## 1. Review Epidemiology of the Problem

- How does the rate compare to a standard? (i.e. Healthy People 2010)
- Is the problem increasing or decreasing?
- Is a particular group more affected than other groups and why?
- When does the disease / problem occur?
- What causes the problem?

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## 2. Review Literature and Consult Experts

To identify causal or risk factors:

- Search the Web
- Conduct a literature search or locate one done by reliable source
- Invite experts to participate



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### 3. Determine Whether Identified Factors are Relevant

- Consult with state or local epidemiologists
- Identify studies or results of surveys of the target community
- Consult other local agencies or institutions

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### Convene Your Planning Group

- Staff need to review information and determine composition of planning group to assure representation at the societal/government/policy level as well as the community and individual levels
- The group needs to be briefed on the results of the needs assessment and the additional data from steps 1-3.
- The group then is asked to brainstorm potential causes and risk factor for the identified health problem or issues

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### Definitions : Precursors

Factors that have been proven to be associated with the problem

- Causal factor
- Risk factor
- Systems barriers
- Protective factors



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## Individual Level Precursors

### Definition:

Factors that operate on the level of the individual (or for a child it could be the parent) that directly cause the outcome in question (cause/effect should be supported by peer reviewed studies)

OR

Factors that increase the risk of an individual's likelihood of having the outcome of concern (documented risk)

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## Examples of Individual Level Precursors: Low Immunization Rate



- Child who is immuno-compromised
- Parental refusal of vaccination due to fear of side effects from vaccine

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## Family/Household and Local Community Precursors

### Definition:

Factors that operate at the level of the family or local community or institution(s) that increase an individual's risk of developing a direct precursor

May include characteristics of local institutions such availability of healthcare provider's that are often, but not always, associated with the problem or its determinants

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### Examples of Family/Community Level Precursors: Low Immunization Rate

- Lack of provider tracking systems/ reminder calls
- Transient housing
- Missed opportunities at medical visit where child has recurrent or chronic health problems



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### Social/Economic/Policy Level Precursors

Definition:

Factors that are operational at the state or national level such as cultural, health, social, legal or economic factors or policies

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### Examples of Social/Economic/Policy Level : Low Immunization Rate

- Poverty
- National vaccine shortage
- Lack of available health insurance for poor kids

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## Consequences

### Definition:

The effects of the problem on individuals, families and society.

Can include financial, physical and psychological effects on the individual, the family or the community

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### Examples of Consequences: Low Immunization Rate

- Parent misses work
- Loss of herd immunity leading to costly increase in infections
- Death or disability for children infected

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### *A Generic Framework for Health Problem Analysis*

#### Social/Economic/Policy Level

SES	Safety	Education
Culture	Environment	Health Care Policies
		Economy

#### Family/Community/Institutional Level

Family/Household	School/Workplace
Community	Health Care/Providers

#### Individual Level

Genetic/Biological	Psychological Factors	Health Status/ Medical Conditions
Cognitive Factors	Health Behaviors	

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Identified Problem

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## Upstream Factors (Social/ Economic/ Policy Level)

**Social**  
Attitudes/policies  
Classism/racism  
Family policies  
Social welfare policies

**Environment**  
Toxic exposures  
Air quality  
Physical hazards  
Zoning/land use  
Infrastructure policy

**Economy**  
Income inequity  
Lack of jobs  
Tax policy  
Regulations  
Occupational Health and Safety  
Corporate practices

**Healthcare**  
Costs  
Insurance policies  
HC distribution  
Coverage for Mental Health/Substance Abuse  
Health regulations

**Education**  
Funding  
Class size  
Standards  
College access  
Adult Ed policies

**Safety**  
Police funding  
Highway safety regulations  
Driving laws  
Criminal laws  
Gun policies

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## Family/Community Factors

**Family/Household**  
Family structure  
Educational level  
Income  
Genetics  
Parenting style  
Family connectedness  
Behavioral Factors  
Family Violence

**Community**  
Extended family  
Close friends  
Religious affiliation  
Social networks  
Social cohesion  
Blight  
Transportation  
Sources of support

**Workplace**  
Physical/toxic hazards  
Pay  
Job security  
Opportunities for advancement  
Psychological atmosphere  
Health insurance

**School**  
Physical /toxic hazards  
Relationships  
Quality of teaching  
Educational resources  
Safety

**Healthcare/Provider**  
Number of providers  
Quality of care  
Location of services  
Willingness to take insurance  
Costs

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## Individual level

**Inborn Conditions**  
Genetic  
Metabolic  
Biological

**Psychological**  
Anxiety  
Depression  
Resiliency  
Self esteem  
Self efficacy

**Stress**  
Allostatic load

**Cognitive**  
Level of education  
Learning challenges

**Health Behaviors**  
Smoking  
Tobacco use  
Illegal substance use  
Eating disorders  
Sedentary lifestyle

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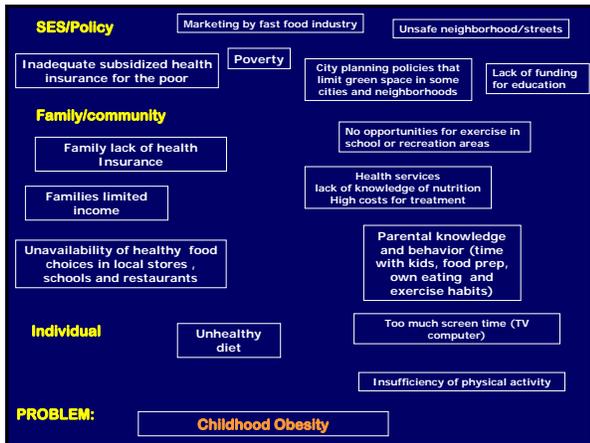
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### 4. Determine the Contribution of Identified Factors

Epidemiologists and other data analysts use a variety of statistical tests to determine risks associated with particular individual level characteristics or risk factors

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### What information do I need to know be able to identify a causal pathway?

- Which populations are most at risk?
- Which risk or causal factors are most strongly associated with the identified problem?
- Which factor(s) contributes most to the size of this problem?
- Which point of intervention will have the greatest potential for improving an outcome?

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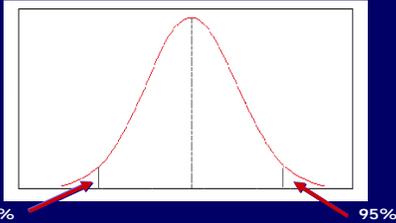
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## Useful Statistics: Confidence Interval

- Could an observed association between a precursor and an outcome be due to chance?

Normal Distribution Curve



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## What does a confidence interval tell you?

- How likely an observed association between two factors is just due to chance (vs. a real relationship between the two factors)
- Using a 95% Confidence Interval only 5% of the time or 1 out of 20 times will the observed association between two factors be due just to chance
- If the value falls beyond the 95% marker on the right, there is a significantly greater risk associated with the factor in question, if beyond the 95% marker on the left, there is a significantly lower risk
- One kind of upstream comparison could be rates of asthma in one neighborhood vs. another with different characteristics

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## How do I get this information?

- FHOP has templates that calculate this statistic
- You only need to know how many people there are in a defined group and how many of them have a particular condition
- Example – how many births are there in each neighborhood and how many of them are preterm

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## Useful Statistics: Relative Risk

- How much more likely is it that a person or community with one risk factor has a bad outcome compared to a person or community without the risk factor?

		LBW			
		YES		NO	
smoker	YES	120	÷	10,000	= .012
	NO	120	÷	20,000	= .006

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## What does this tell us in words?

- Women who smoke during pregnancy are twice as likely as those who don't smoke to have LBW babies
- Implementing a smoking cessation intervention could significantly reduce the rate on LBW in this community.

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## Useful Statistics: Population Attributable Risk

- Answers the question: "If my intervention is successful, how much will it impact the overall rate of this condition in my community?" by quantifying what portion of the incidence of an outcome among people exposed to a risk factor can be attributed to the exposure to the risk factor
- Example: If I am successful in lowering the rate of smoking how many fewer LBW babies will there be and what would my overall LBW rate be as a result of this?

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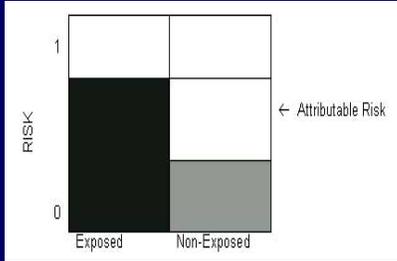
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## Attributable Risk Diagram



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## What Benefit is Risk Analysis to me?

- Assists in prioritizing which factors to address
- Assists in making the case for resources, policy changes and directions to take
- Assists in developing realistic measurable objectives and performance measures
- Assists in estimating financial impacts

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## What if I don't have any resources for data analysis?

- Use FHOP templates and technical assistance
- Use literature or local experts to identify results of other studies
- Consult with MCAH Epi staff

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## 5. Identify the Relationships Among Factors

Determine how identified causal and risk factors interact to either increase the chances of a negative outcome or to promote a positive one

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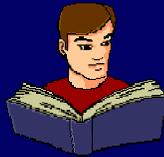
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## Linkages

### Definition:

The association between precursors and problem

- Review the literature
- Consult experts
- Consult stakeholders
- Use results of risk analyses




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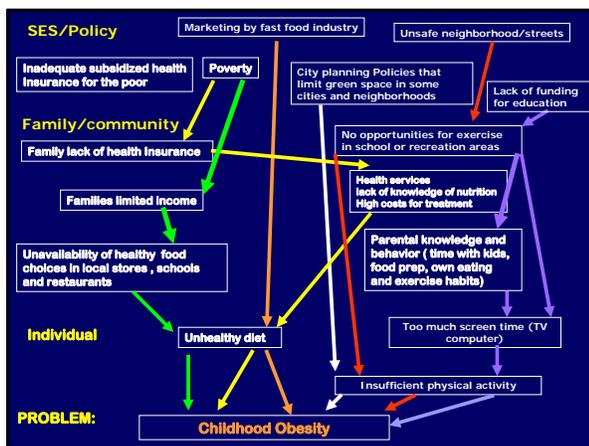
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## 6. Determine Intervention Points

- Determine where you would get the greatest effect
- Determine whether there have been well evaluated interventions
- Assess the available resources

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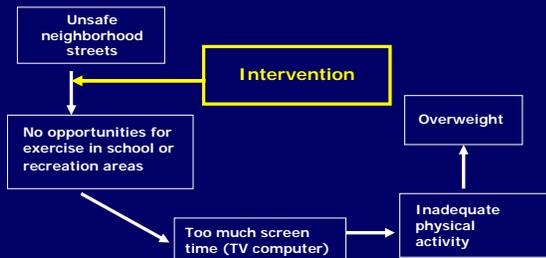
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## Diagramming Causal Pathways to Identify Strategic Interventions



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## Benefits

- Clearly documents the decision making process for the group and for others
- Can use simplified problem analysis or causal pathway diagram to communicate rationale for intervention strategy to policy makers and the public

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## Developing Specific Strategies and Interventions

- Use the Mobilizing for Action through Planning and Partnerships (MAPP) and Community Scorecard model
- Identify preliminary strategies and engaging appropriate partners
- Identify community assets (additional partners and resources)
- Implement community wide interventions
- Monitor outcomes

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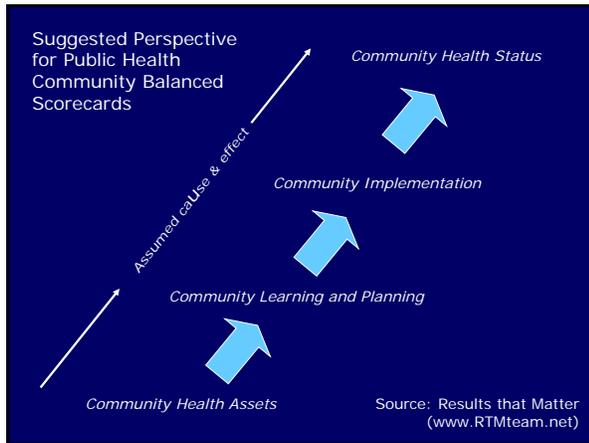
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## Objectives Brainstorm List: *Organize into a Strategy Map*

- Develop & advocate for school & family health policies, programs & plans
- Partner with schools, parents, & other stakeholders
- Improve school nutrition & fitness activities
- Improve child nutrition & reduce calories consumed
- Increase neighborhood recreational fitness services
- Increase age appropriate activity
- Minimize childhood obesity
- Promote family nutrition and fitness to parents & kids

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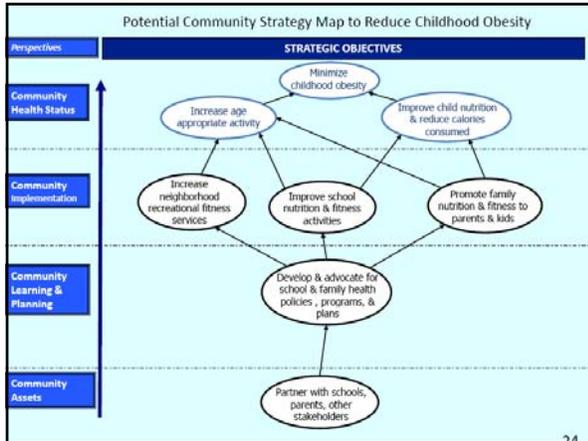
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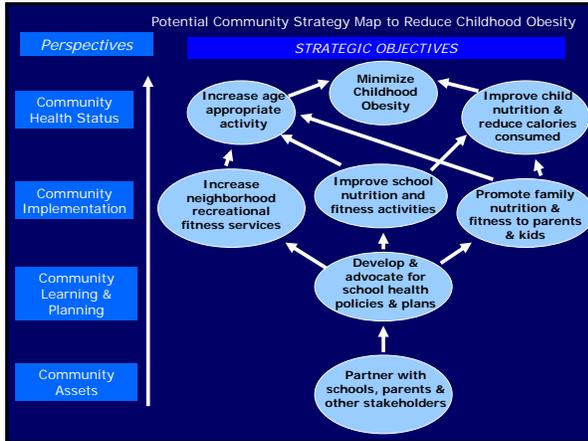
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Community Partners with Roles in Each Strategic Objective

PERSPECTIVE: Objectives	Health Dept	Schools	Parent-Teacher Associations	Student Groups	Parks & Rec Dept	Communities of HOPE
<b>COMMUNITY IMPLEMENTATION:</b>						
Increase neighborhood recreational fitness services					✓	✓
Improve school nutrition & fitness activities		✓				
Promote family nutrition & fitness to parents & kids	✓	✓	✓	✓	✓	✓
<b>COMMUNITY LEARNING &amp; PLANNING:</b>						
Develop & advocate for school & family health policies, programs, & plans	✓	✓	✓	✓	✓	✓
<b>COMMUNITY ASSETS:</b>						
Partner with schools, parents, other stakeholders	✓	✓	✓	✓	✓	✓

Results That Matter Team ([www.RTMteam.net](http://www.RTMteam.net))

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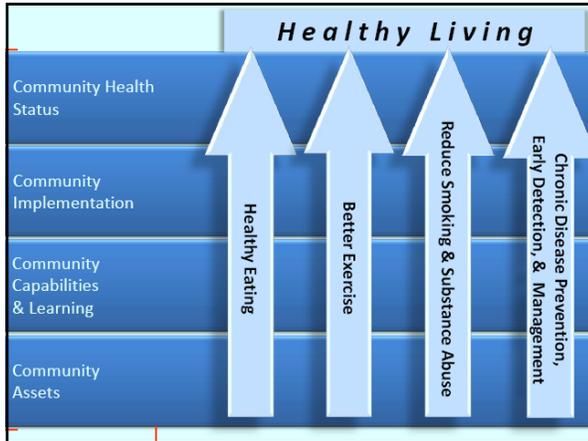
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### Take Home Message

- Current research is demonstrating very tangible relationships between upstream social determinants and policies and adverse effects on the community and the individuals that live there
- It is increasingly clear that only by addressing these factors can long term disparities be reduced
- Using a formal socio-ecological framework for problem analysis is a useful way of identifying upstream causal pathways and meaningful intervention strategies
- This requires that local MCAH programs build new broad based partnerships that commit to pooling expertise and resources to address upstream issues

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### Contact Information

Gerry Oliva M.D., MPH  
 Director  
 UCSF Family Health Outcomes Project  
 Telephone 415-476-5283  
 E-mail [olivag@fcm.ucsf.edu](mailto:olivag@fcm.ucsf.edu)  
 Web [www.ucsf.edu/fhop](http://www.ucsf.edu/fhop)

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