Foundations of Global Health

Global Health Programs

Learning Objectives

• Discuss program strengths and weaknesses
• Identify elements of program design
• Understand how to evaluate a health program

U.S. Community Water Fluoridation

• According to the CDC “More than two-thirds of U.S. children and adolescents aged 19 years or younger, 91% of U.S. adults, and 93% of Americans aged 60 years and older have experienced tooth decay.”

U.S. Community Water Fluoridation

• History
  – Tooth decay has been a health issue for decades
  – Fluoride benefits for teeth were discovered in the 1930’s
  – Started in Grand Rapids, Michigan in 1945
  – Water fluoridation prevents tooth decay through direct contact
  – Fluoride is naturally occurring in water sources
  – Currently more than 184 million people in the U.S. consume fluoride enriched water

Purpose of the Program

• Reduce the risk of tooth decay
• Lower annual cost of dental care
• Improve quality of life
### Program Design
- Community based Government driven program
- Participants: all who are hooked up to the public water system
- Regulated by the Environmental Protection Agency

### Program Operation
- Started in Grand Rapids, Michigan in 1945
- Currently serves over 184,000,000 people
- Fluoride delivered through a Central Water System
- Passive participation by the community
- Monitoring through the CDC Water Fluoridation Reporting System

### Program Results
- Between 1945-1969
  - Tooth decay rates declined 56% in communities with fluorinated water
- Currently
  - Tooth decay rates are around 18-40%

### Program Cost
- The per person cost of fluoridation varies by the size of the community population.
  - Cities with more than 20,000 people = 50 cents a year
  - 10,000-20,000 people = $1
  - Less than 5,000 people = $3

### Benefits
- Fluoride’s action in preventing tooth decay benefits both children and adults throughout their lives. The health benefits of fluoridation are
  - Fewer cavities and less severe cavities.
  - Less need for fillings and tooth extractions.
  - Less pain and suffering associated with tooth decay.
  - Better self-esteem from teeth that work well and look good.

### Cost Effectiveness
- In 2004, an estimated $78 billion was spent on dental services
  - 5% of health care expenditures
- CDC estimates that every $1 invested in community water fluoridation saved $38 in avoided costs for dental treatment
Cost Effectiveness

• Average cost to fill one cavity with dental amalgam is approximately $65—the approximate cost of providing fluoridation to an individual for a lifetime.

Program Discussion

• Strengths
  – Cheap
  – Safe
  – Minimal effort for participants
  – Increases effectiveness of other health behaviors

• Weaknesses
  – Not everyone is

Summary

• Community water fluoridation is an effective, safe, and inexpensive way to prevent tooth decay.
• Used successfully in the United States for more than 50 years.
• Communities with fluoridated drinking systems have 15–40 percent less tooth decay.

African Micro-Gardens

• Small rural area
• Minimal trade from village to village
• Local water source is a river 1 mile away
• Population suffers from malnutrition

Problem Statement

• Poor nutrition and food insecurity are huge problems in developing countries
  – Affordability and access to proper nutrition is limited
  – Malnutrition impacts all aspects of life
  – Lowers the survivability of children

Purpose of the Program

• Provide a local source of vegetables
• Reduce family costs of purchasing food
• Increase nutritional value of meals
• Reduce childhood malnutrition
Program Design

• NGO based program focusing on childhood malnutrition
• Goal is to reduce malnutrition through small family gardens
• Target population is local villagers with small children

Program Operations

• June-August 2008
• Progress monitored through number of participants involved
• Volunteer workers
  – House to house visits
  – Instruct on how to start and maintain a micro-garden
  – Provide lessons on balanced nutrition

Program Results

• 20 families were involved
• Families started the garden but didn’t stick with it
• Families were selling the vegetables instead of eating them

Cost Effectiveness

• Maintaining the micro-garden cost the same as buying the vegetables from the local market.
• More time consuming
• Had to bring water from the river
• Vegetables were not being eaten

Program Discussion

• Strengths
  – Food producing
  – Teaches a skill
  – Education

• Weaknesses
  – No local support
  – Cost less to buy once time and effort was calculated
  – Water source too far away to be sustainable
  – Access vegetables were not going to the children

Summary

• Without local support most programs will fail
• Cost effectiveness should be considered before starting a program, not after.
• Need to take into account existing resources or lack thereof. (ex. Distance from village to river)
• Great ideas without adequate planning and preparation accomplish little