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# **Economic Costs of Fetal Alcohol Syndrome**

by

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**Thanks to Chuck Lupton of NGIT**

# Overview

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- ◆ FAS costs US \$5.4 billion in 2003
- ◆ An FAS birth carries lifetime health costs of \$860,000 (\$300,000 today!) although can be as high as \$4.2 million
- ◆ Plausible to assume that FAS reduces “discounted” lifetime productivity \$200,000; lost wages & subsidies
- ◆ Even “expensive” FAS prevention may be “cost effective”: up to \$850,000 per child

# Methods

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- ◆ Project prior estimates by Lewin Group (1998)
  - Cost to the US of FAS in a year
- ◆ Review of literature by C. Lupton of NGIT
- ◆ Update and extend analyses published in 1986
  - Cost of a “child born with FAS”
- ◆ Address cost effectiveness, quality adjusted life years, and willingness to pay

# Different Types of Economic Studies

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- ◆ Cost of illness
- ◆ Cost effectiveness
- ◆ Cost benefits

# Concepts Behind Cost of Illness

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- ◆ Assess overall burden on the economy in use and loss of resources per year
- ◆ Consequences (epidemiology)
  - Primary and comorbid health, social/justice system
- ◆ Causality (epidemiology)
  - Attribution factors
- ◆ Costs (economics)
  - Approach to valuation

# Components of Economic Costs

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- ◆ Direct Costs (actual use of goods and services)
  - Health system
  - Social system (not transfers)
  - Justice System
- ◆ Indirect Costs (foregone potential productivity)
  - Mortality
  - Morbidity
  - Disability
  - Incarceration/crime career

# Valuation of Indirect Disease Burden

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- ◆ Deaths
- ◆ Morbidity: sickness; lost days; impaired days
- ◆ Human capital
  - Current market value of productivity
  - Present discounted value lost future productivity
- ◆ Willingness to pay (up to \$6 million/life)
- ◆ Quality adjusted life years QALY (\$50-100,000)
- ◆ Disability adjusted life years DALY
- ◆ Years of potential life lost YPLL

# Major Direct Cost Components

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- ◆ Estimate # needing care, cost of care, ages
- ◆ 2 per 1000 overall; different for services
  
- ◆ Neonatal intensive care
- ◆ Audiological defects
- ◆ Cleft palate
- ◆ Neurotube
- ◆ Special education services
- ◆ Residential care



# Economic Cost of FAS 1998 and 2003

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## ◆ In 1998

- Direct : \$2.9 billion
- Indirect: \$1.25 billion
- Total: \$4.15 billion

## ◆ In 2003

- Direct: \$3.9 billion (6.1% annual increase)
- Indirect: 1.50 billion (4% annual increase)
- Total: \$5.4 billion

# Lifetime Costs

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## ◆ Direct costs

- Average \$860,000
- Maximum \$4.2 million
- Discounted Lifetime (3 percent)
  - Average: \$300,000
  - Maximum: \$1,500,000

# Indirect Costs

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- ◆ Value of lost potential productivity
- ◆ Human capital approach (PHS Guidelines)
- ◆ Age/gender adjusted valuation: up to \$60,000/yr
- ◆ in 2003 expected > \$2.5 million at birth
  - Discounted \$986,000
- ◆ Mental disability/retardation due to FAS related to 20.5% reduction
- ◆ \$202,000 lifetime discounted loss per child

# New Areas for Study

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## ◆ Prevalence

- ARBD Alcohol-Related Birth Defects
- ARND Alcohol-Related Neurodevelopmental Disorder
- Mental health: attention deficits; depression; autism
- Criminal justice involvement

# Are FAS Interventions Worth Supporting?

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- ◆ IOM and NIAAA: very little strong research
- ◆ Can't rigorously evaluate particular preventions
- ◆ However, can look at potential benefit from successful prevention (Harwood and Napolitano, 1986)
- ◆ What will benefits/savings be if save 1 child?

# Cost Effectiveness

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- ◆ Standard allows comparison across all of health (PHS Taskforce; Gold et al., 1996)
- ◆ Compares medical interventions on the basis of cost to save a quality adjusted life year (QALY)
- ◆ Medical interventions costing  $< \$50,000/\text{QALY}$  are “generally” considered “cost effective”

# Quality of Life Preference Scores

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- ◆ Perfect health: 1.0
- ◆ Moderate disability: .50
- ◆ Death/vegetative state: 0.0
- ◆ Gen. pop. 35-39: .86
- ◆ Gen. pop. > 75 years: .71
  
- ◆ Congest. heart failure: .20
- ◆ Legal blindness: .48
- ◆ Profound deafness: .59
  
- ◆ Depression : .31
- ◆ Schizophrenia .31-.61
- ◆ Children with developmental disability
  - Severe: .40
  - Moderate: .60
  - Mild .80
- ◆ Reading disability: .77

# Impact of FAS on Quality of Life

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- ◆ Conservative estimate: FAS reduces QALY by 17% or 11 years
- ◆ Potential savings from preventing 1 case of FAS:
  - \$550,000 in value of QALY
  - \$300,000 in medical costs
- ◆ If an intervention cost less than \$850,000 per FAS case prevented it would be considered “generally cost effective”



# Summary

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- ◆ FAS costs US \$5.4 billion in 2003
- ◆ An FAS birth carries lifetime health costs of \$860,000 (\$300,000 today) although can be as high as \$4.2 million
- ◆ Costs may be low: ARBD, ARND, criminal justice
- ◆ Plausible to assume that FAS reduces “discounted” lifetime productivity \$200,000
- ◆ Even “expensive” FAS prevention may be “cost effective”: up to \$850,000 per child

# COI Often Called “Gee Whiz” Numbers

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- ◆ More readily grasped than a large variety of diverse impact estimates: a single number
- ◆ These numbers can be “large”
  - Attention commanding
  - Can be compared to other budgets & problems
- ◆ Suggest something **SHOULD** be done
- ◆ Do not tell us **WHAT** should be done
  - Prevention versus treatment or other strategies