Diet and Physical Activity: Critical Issues and Barriers To Reach The Goals

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Lifespan

Catch-up growth and obesity in male mice

Susan E. Ozanne, C. Nicholas Hales

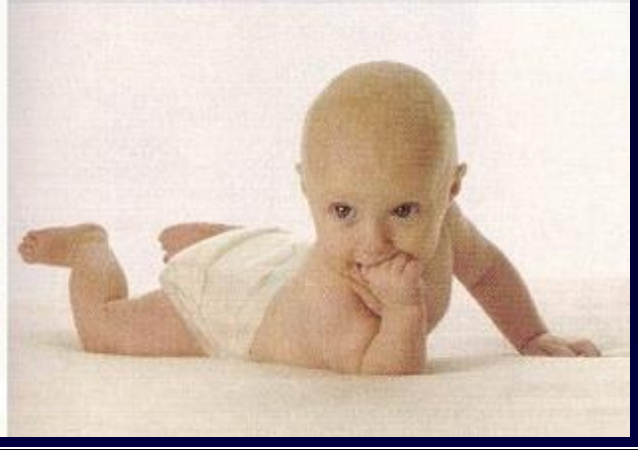
NATURE | VOL 427 | 29 JANUARY 2004

Table 1 **Dietary factors and lifespan of male mice**

Group	*Pregnancy diet (% protein)*	*Lactation diet (% protein)*	*Weaning diet*	*Average age at death (days)*
Normal chow	20	20	Chow	765 ± 22
Normal cafeteria	20	20	Cafeteria	715 ± 21
Catch-up chow	8	20	Chow	568 ± 36
Catch-up cafeteria	8	20	Cafeteria	517 ± 35
Postnatal low-protein chow	20	8	Chow	814 ± 25
Postnatal low-protein cafeteria	20	8	Cafeteria	807 ± 28

The different dietary regimes are summarized in the first three columns ($n = 24$ mice per group). Lifespans are expressed as mean ± standard error and were analysed by two-way analysis of variance followed by Duncan's post-hoc testing where appropriate. Effect of early diet: $P < 0.001$; effect of obesity, $P < 0.01$.

There is, after all, a significant difference between living to be 50 years old and reaching the age of 75.


To what extent early physical activity may positively affect growth and health later on ?



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Epidemiologic and Physiologic Approaches to Understanding the Etiology of Pediatric Obesity: Finding the Needle in the Haystack

JOHN J. REILLY, ANDREW R. NESS, AND ANDREA SHERRIFF

We regulate our energy balance, but coupling of intake and Expenditure may become less effective at habitually low levels of energy expenditure

- *Does a "lazy" infant eat more than needed with an early dysregulation of the energy balance equation?*
- *Are breastfed more active than formula-fed?*

CONSENSUS STATEMENT FROM THE AMERICAN HEART ASSOCIATION

TABLE 1. AHA Pediatric Dietary Strategies for Individuals Aged >2 Years: Recommendations to All Patients and Families

Balance dietary calories with physical activity to maintain normal growth
60 Minutes of moderate to vigorous play or physical activity daily
Eat vegetables and fruits daily, limit juice intake
Use vegetable oils and soft margarines low in saturated fat and *trans* fatty acids instead of butter or most other animal fats in the diet
Eat whole grain breads and cereals rather than refined grain products
Reduce the intake of sugar-sweetened beverages and foods
Use nonfat (skim) or low-fat milk and dairy products daily
Eat more fish, especially oily fish, broiled or baked
Reduce salt intake, including salt from processed foods

Circulation 2005;112: 2061-75

Home	Set aside time for Healthy meals Physical activity Limit television viewing
School	Fund mandatory physical education
Urban design	Protect open spaces Build pavements (sidewalks), bike paths, parks, playgrounds, and pedestrian zones

CHILDHOOD OBESITY: PUBLIC HEALTH CRISIS, COMMON SENSE CURE

Lancet 2002, **360:** 473–82

PYRAMID OF PHYSICAL ACTIVITY

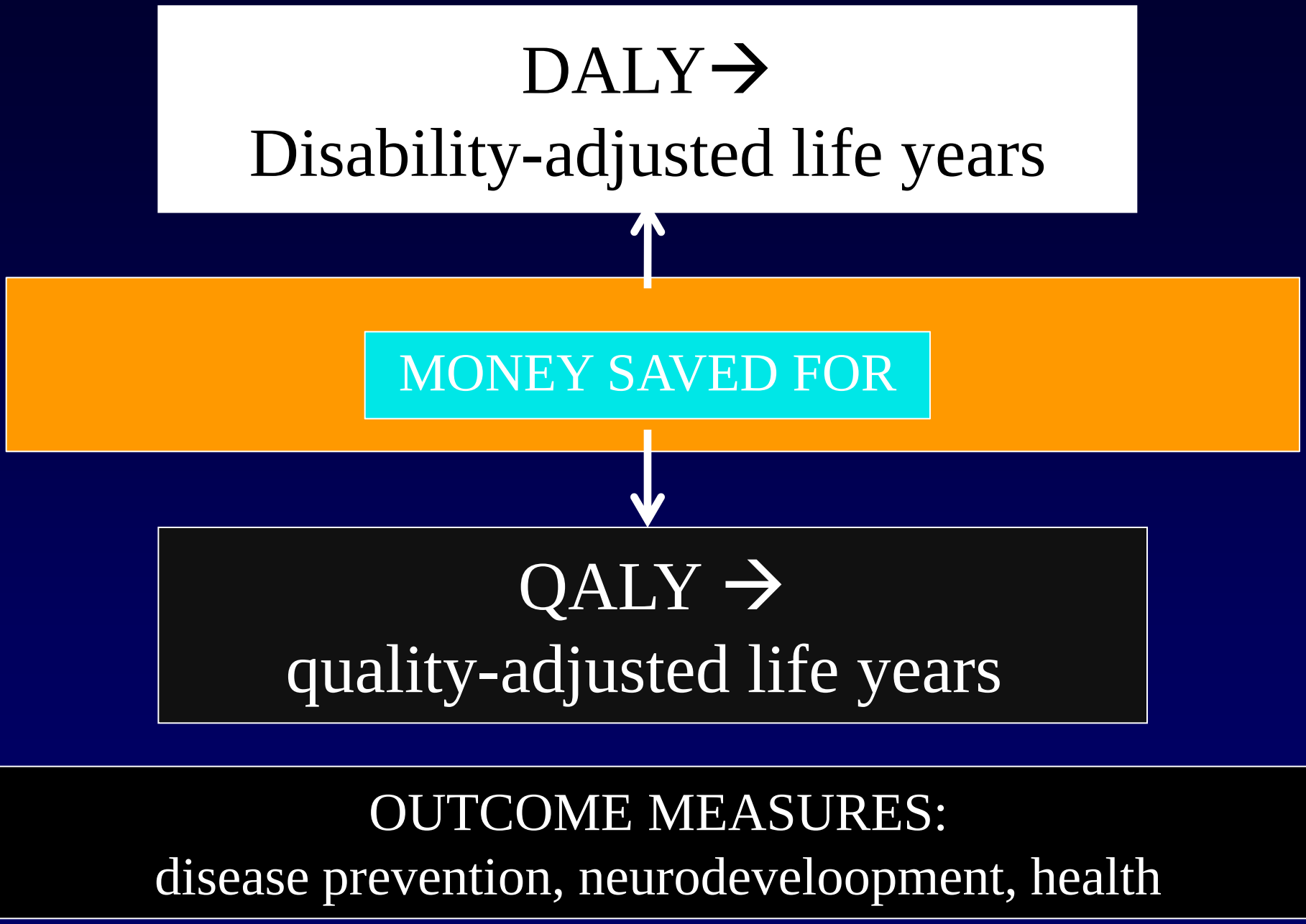
Funny activities!!

NO SEDENTARY CONDITIONS!

2-3 X week

3-5X week

EVERY DAY


DALY→
Disability-adjusted life years
MONEY SAVED FOR
QALY →
quality-adjusted life years
OUTCOME MEASURES:
disease prevention, neurodeveloopment, health

The Cost-effectiveness of Australia's Active After-school Communities Program

Moodie ML et al, Obesity 2010;18:1585

Table 3 Cost-effectiveness results

Total BMI units saved	4,200 (1,700; 9,100)
Median BMI reduction per child	Prep to Grade 4—boys and girls 0.07 (0.03; 0.15)
	Grades 5 and 6 boys 0.08 (0.03; 0.18)
	girls 0.09 (0.04; 0.19)
Total DALYs saved	450 (2,450; 770)
DALYs saved per person	Prep to Grade 4—boys 0.006 (0.003; 0.011)
	girls 0.005 (0.002; 0.011)
	Grades 5 and 6 boys 0.007 (0.003; 0.016)
	girls 0.006 (0.004; 0.014)
Total intervention cost	$40.3M ($28.6M; $56.2M)

2-year controlled community-based obesity prevention initiative

The cost per kilogram of weight-gain prevented over the 2 years of the intervention was NZ$1,708 in 7-year old children (average weight-gain prevented of 0.75 kg) and NZ$664 in 13-year old children (average weight-gain prevented 1.93 kg). 1NZ$=0.63€

A systematic review of the routine monitoring of growth in children of primary school age to identify growth-related conditions.

- OBJECTIVES: To clarify the role of growth monitoring in primary school children, including obesity, and cost-effectiveness
- RESULTS: From 31 studies growth monitoring is associated with health improvements [incremental cost per quality-adjusted life-year (QALY) of 9500 pounds] and monitoring was cost-effective 100% of the time over the given probability distributions for a willingness to pay threshold of 30,000 pounds per QALY.

CONCLUSIONS Identification of effective interventions for the treatment of obesity is likely to be considered a prerequisite to any move from monitoring to a screening programme. Similarly, further long-term studies of the predictors of obesity-related co-morbidities in adulthood are warranted.

Fayter D et al, Health Technol Assess 2007;11: 1-163

GROW MORE NOW, PAY LATER!

FIGURE 3–11 Both girls pictured are the same age. However, the child on the left consumed a high-protein diet over her lifetime. Genetics and protein consumption both impact overall height and growth rates.

Krause's Food, Nutrition & Diet Therapy, 10th Ed, 2000