OBESITY: CLINICAL IMPACT AND INTERVENTIONS THAT WORK: AN UPDATE

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(*Ethn Dis.* 2003;13[suppl3]:S3-30–S3-31)

INTRODUCTION

The rates of childhood obesity have increased in the past decade, particularly among African-American boys and girls. They have also risen noticeably among Hispanic-American adolescents. "And they will continue to rise if efforts are not made to change the environmental factors that promote obesity and make treatment so difficult," Dr. Bonita Falkner said.

Weight has adverse effects on children's health in terms of insulin resistance, higher blood pressure, risk for diabetes, and other metabolic insults to children's bodies. For example, in a study of 130 children with primary hypertension, many of these youngsters were found to have left ventricular hypertrophy. (Daniels et al. *Circulation.* 1998;97:1907)

The rise in type 2 diabetes among children has been dramatic. In 1982, only 0.7% of new cases were reported per 100,000 population. That percentage increased to 7.2% by 1994.

The more risk factors a child has, the more he or she is apt to prematurely develop cardiovascular disease, Dr. Falkner said. These risk factors include: high blood pressure; abnormal blood lipids; and abnormal glucose tolerance as a consequence of the obesity.

"The atherosclerosis time line for heart and vascular pathology is being pushed down to earlier ages by childhood obesity. Evidence of early stages of atherosclerosis has been demonstrated in the young and this is linked with the presence of the traditional risk factors of high blood pressure, obesity, abnormal lipids, and smoking," Dr. Falkner pointed out.

HELPING YOUNG PATIENTS AT-RISK OF OBESITY

What can clinicians do to help young patients who are obese or at risk of becoming obese? Dr. Falkner recommends 4 approaches for medical management: prevention of obesity; screening for other risk factors; evaluation to identify obesity-related disorders; and treatment to prevent or reverse the pathology.

Prevention

For all children, during primary care health assessment, calculate the child's body mass index (BMI). Plot the BMI by age and sex. Track the BMI, while providing diet and exercise counseling. Provide "anticipatory guidance" to parents of at-risk children. This guidance should include information on appropriate early childhood feeding, food quality, food quantity (portion size), and eating patterns. Parents should also be advised about appropriate physical activity for their children.

Screening

Include family history (diabetes, hypertension, and cardiovascular events), body size (height, weight, and BMI), and blood pressure. Evaluate an obese child who has at least one other risk factor. "We now have the criteria to measure and diagnose hypertension, glucose metabolism, blood lipid concentration and dysmetabolic syndrome in children," Dr. Falkner pointed out. (see the Table)

Evaluation

Healthcare providers should evaluate children for multiple risk factors linked with obesity. They should evaluate blood pressure, glucose tolerance, lipids, and renal output.

Treatment

Treat obesity through lifestyle changes, such as diet and exercise; treat obesity-associated abnormalities; and control blood pressure and lipids. The lifestyle changes should be sustained and should include involvement by the child's family.

STRATEGIES FOR PREVENTING CHILDHOOD OBESITY

What are public health strategies for combating the "toxic environment" that surrounds childhood obesity? Dr. Falkner had these recommendations:

- Encourage children to eat high-quality foods and appropriate portion sizes.
- Enlist schools and recreation facilities in offering a safe environment for physical activity.
- Improve family access to supermarkets and other vendors of fresh produce.
- Remove school vending machines that provide sodas and snacks.
- Establish incentives for all food vendors to limit portion sizes (avoid "supersizing").
- Require food manufacturers to provide food labeling of nutrition information that is user-friendly.

Criteria to measure at-risk children

Risk Factor	Category/Level	Criteria	Source
Body weight	Overweight	BMI >85th%	www.cdc.gov/growthcharts
	Obesity	BMI >95th%	
Blood pressure (BP)	Normotensive	Systolic and diastolic BP <90th%	*Pediatrics*. 1996;98:648–658
	High normal	Systolic and/or diastolic BP >90th% but <95th%	
	Hypertension	Systolic and/or diastolic BP >95th% on repeated measures	
Glucose tolerance	Normal glucose tolerance	Fasting glucose <110 mg/dL	*Diabetes Care*. 1997;20:1183–1197
	Impaired glucose tolerance	Fasting glucose >110 and <126 mg/dL or during OGGT a glucose value at 120 minute >140 and <200 mg/dL	
	Diabetes mellitus	Fasting glucose >126 mg/dL or during OGTT a glucose value at 120 minutes >200 mg/dL	
Blood lipids*	Normal total cholesterol	<170 mg/dL	*Pediatrics*. 1992;89:525–584 and *ATP III,* NIH Publication No. 01-3670
	Borderline high total cholesterol	170–199 mg/dL	
	High cholesterol	≥200 mg/dL	
	Normal LDL cholesterol	<110 mg/dL	
	Borderline high LDL cholesterol	110–129 mg/dL	
	High LDL cholesterol	≥130 mg/dL	
	Normal HDL cholesterol	≥40 mg/dL	
	Low HDL cholesterol	<40 mg/dL	
Dysmetabolic syndrome	3 or more of the following:	Obesity (BMI >95th%)	Modified for youth from *JAMA,* 2002;287:356–359
	Elevated BP (systolic and/or diastolic >90th%)		
	Abnormal lipids (HDL-C <40 mg/dL, and/or triglycerides >150 mg/dL, and/or LDL-C >130 mg/dL)		
	Impaired glucose tolerance (fasting glucose > 110 mg/dL, or any glucose >200 mg/dL)		

* Patients with familial hypercholesterolemia generally have LDL cholesterol levels above 160 mg/dL; patients with obesity-related dyslipidemia generally have triglyceride levels >150 mg/dL and low HDL cholesterol.