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Heart Health Starts in Childhood

Most children don't have heart disease. But researchers have learned that what happens during childhood affects heart disease risk in adulthood. For example, fatty plaques begin to build up in childhood. Then rupture of a plaque or blockage of an artery can cause a heart attack or stroke in a relatively young adult. This may lead to early death.

Children who have heart disease risk factors can be identified. Then steps can be taken to reduce their risk and delay or prevent heart disease when they become adults. For example, a child who is overweight or obese is at increased risk of heart disease in adulthood. But if that child grows up to be an adult of normal weight, he/she has the same risk as if he/she were never overweight or obese. Risk reduction delays or prevents progression to clinical disease.

So it's important to identify risk factors in children and help them get rid of those risk factors as soon as possible. It's also important to prevent children from getting risk factors to begin with.

Heart disease risk factors in children

- Family history of heart disease
- Overweight or obese
- Dyslipidemia: high total cholesterol and/or triglycerides, low HDL cholesterol
- High blood pressure
- Physically inactive
- Diabetes
- Tobacco use or secondhand smoke exposure

Children who have multiple risk factors have an even greater risk of heart disease. There are 2 clusters of multiple risk factors that are relatively common in children¹:

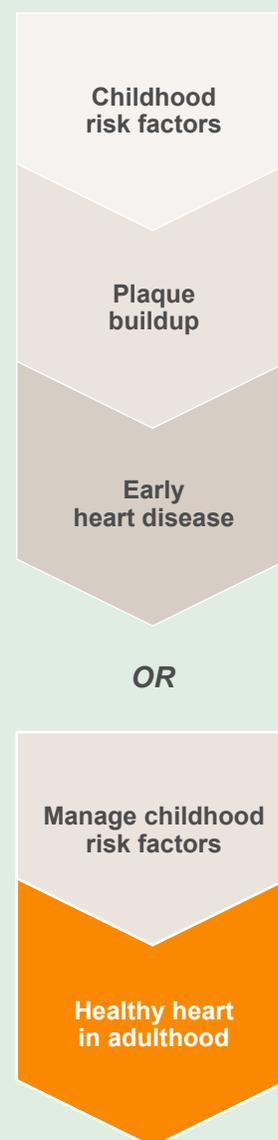
1. Physically inactive, overweight or obese, high total cholesterol, low HDL cholesterol, and high systolic blood pressure
2. Tobacco use, obesity, and 1 other risk factor; diabetes, high triglycerides, low HDL cholesterol, and high blood pressure may be present due to the obesity

Preventing heart disease

Preventing or lowering risk factors in childhood will lead to a more healthy heart in adulthood. Experts recommend these steps during childhood¹:

- Update family history of early heart disease; use it to stratify the child's risk.
- Be sure to get good nutrition and to balance calorie needs.

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- Starting at age 5 years, get at least 1 hour of moderate to vigorous exercise each day.
- Limit sedentary time to less than 2 hours per day.
- Don't smoke; stay away from secondhand smoke.
- Keep blood pressure normal using diet, weight management, and exercise; add medicine as needed.
- Manage abnormal lipids via diet, weight loss, and exercise; add medicine as needed.
- Keep body mass index in the normal range using diet and exercise; add medicine as needed.

When a child has multiple risk factors, the steps taken should be more intense.

Helpful tests

Experts recommend these tests to identify risk factors in children¹:

- Blood pressure: screen once a year starting at age 3; interpret using age-, gender-, and height-specific norms found at http://pediatrics.aappublications.org/content/128/Supplement_5/S213.full.pdf
- BMI: screen all children beginning at age 2 years; use calculator and age- and gender-specific percentile distributions found at http://www.cdc.gov/healthyweight/assessing/bmi/childrens_BMI/about_childrens_BMI.html
- Fasting lipid profile or nonfasting HDL cholesterol: screen all 9- to 11-year-olds and all 17- to 21-year-olds
- Fasting plasma glucose or hemoglobin A1c: screen every 2 years, beginning at age 10 years or at onset of puberty if puberty occurs earlier

Weight	Normal	Overweight	Obese
BMI	5 th – <85 th percentile	≥85 th – <95 th percentile	≥95 th percentile
Lipids	Acceptable	Borderline	High
Total cholesterol (mg/dL)	<170	170 – 199	≥200
LDL cholesterol (mg/dL)	<110	110 – 129	≥130
HDL cholesterol (mg/dL)	<40	40 – 45	≥45
Non-HDL cholesterol (mg/dL)	<120	120 – 144	≥145
Triglycerides (mg/dL)			
0 – 9 years	<75	75 – 99	≥100
10 – 19 years	<90	90 – 129	≥130
Diabetes	Normal	Prediabetes	Diabetes
Glucose (mg/dL)	<100	100 – 125	≥126
Hemoglobin A1c (%)	4 – 6	5.7 – 6.4	≥6.5

Additional information

- A wealth of information about identifying and managing heart disease risk factors in children can be found at http://pediatrics.aappublications.org/content/128/Supplement_5/S213.full.pdf.
- Consider referring your patients to the following source to help them learn about heart disease risk factors in children: http://www.texasheartinstitute.org/HIC/Topics/HSmart/children_risk_factors.cfm.

Reference

- Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: summary report. *Pediatrics*. 2011;128:S213-S256.