

# **Familial Hypercholesterolemia in Public Health and Clinical Practice**

## **Pediatric Perspective**

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# **Addressing Familial Hypercholesterolemia**

**A Model Program for States**

Neal W. CDC 1998-2000

# The West Virginia CARDIAC Project

- **C**oronary
- **A**rtery
- **R**isk
- **D**etection
- **I**n
- **A**ppalachian
- **C**ommunities

“To reduce cardiovascular disease mortality in West Virginia through research and intervention in children”





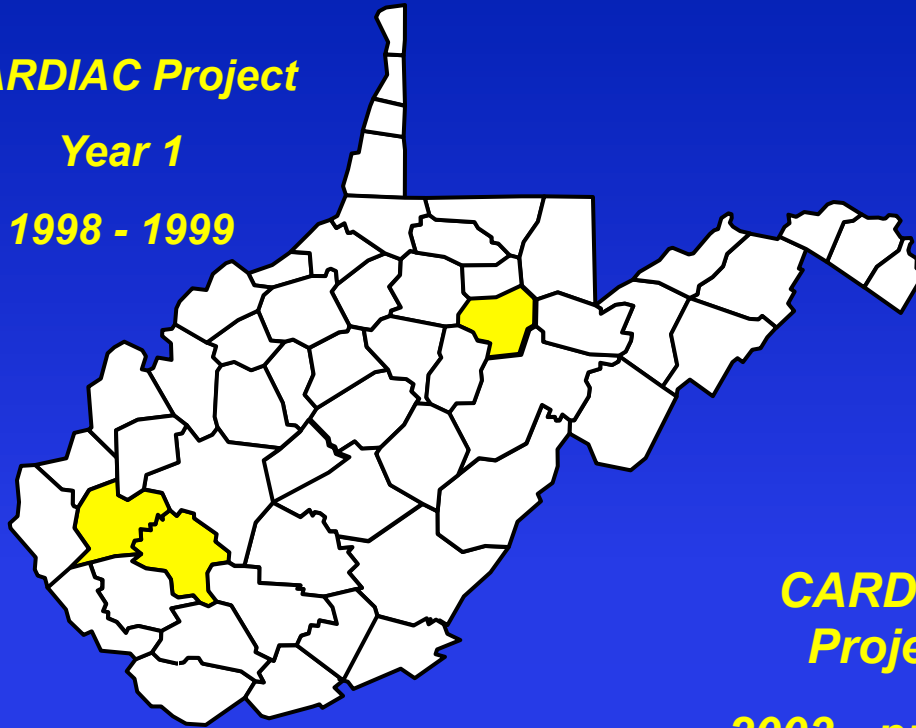
# What does the **CARDIAC** Project Do?

- Offers CVD screening to all 20,000 5<sup>th</sup> grade students throughout West Virginia in the school setting
- Sends results home to parents with recommendations for lifestyle changes or referral to clinic
- Initiates interventional strategies

**CARDIAC Project**

**Year 1**

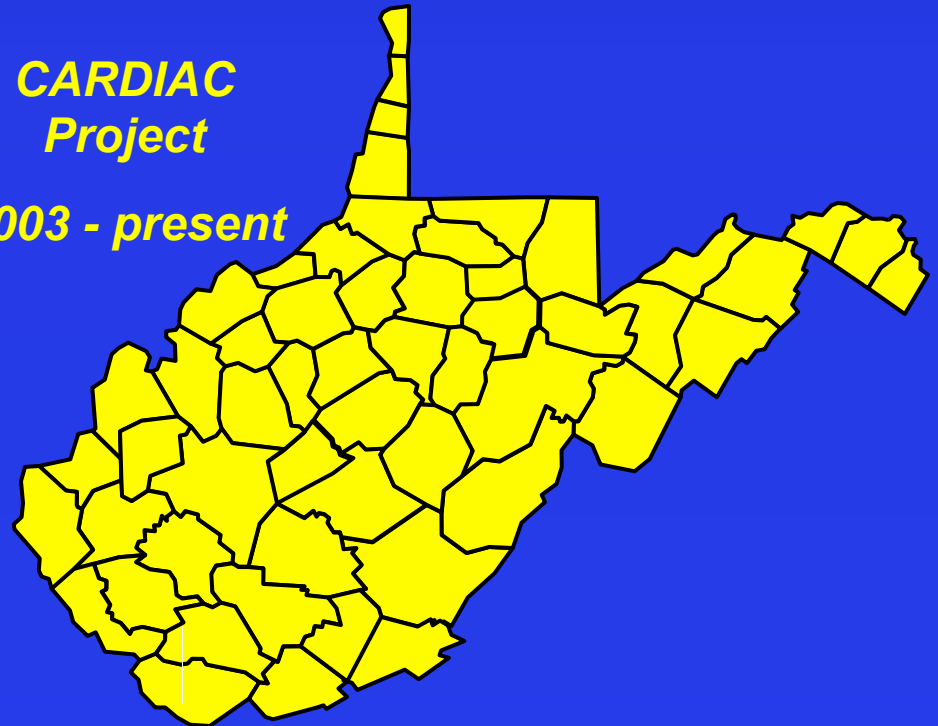
**1998 - 1999**



**Within 5 years,  
CARDIAC  
began  
operating in all  
WV counties!**

**CARDIAC  
Project**

**2003 - present**



# WHAT HAPPENS WHEN WE VISIT THE SCHOOL ON SCREENING DAY?

- Measure height and weight (in private)
- Calculate Body Mass Index (BMI)
- Check blood pressure
- Examine neck for Acanthosis Nigricans (AN)
- Measure blood cholesterol, glucose, and insulin

*\* Parents of children screened are also eligible for free cholesterol screening.*

# **CARDIAC Screening Results 5<sup>th</sup> Grade (1998-2015)**

- **95,228 students screened**
- **47.1% BMI  $\geq$  85<sup>th</sup> percentile**
- **23.2% hypertensive**
- **7.3% LDL  $\geq$  130 (6,952 5<sup>th</sup> graders)**
- **5% have Acanthosis Nigricans**
  - **40% of AN students were hyperinsulinemic**

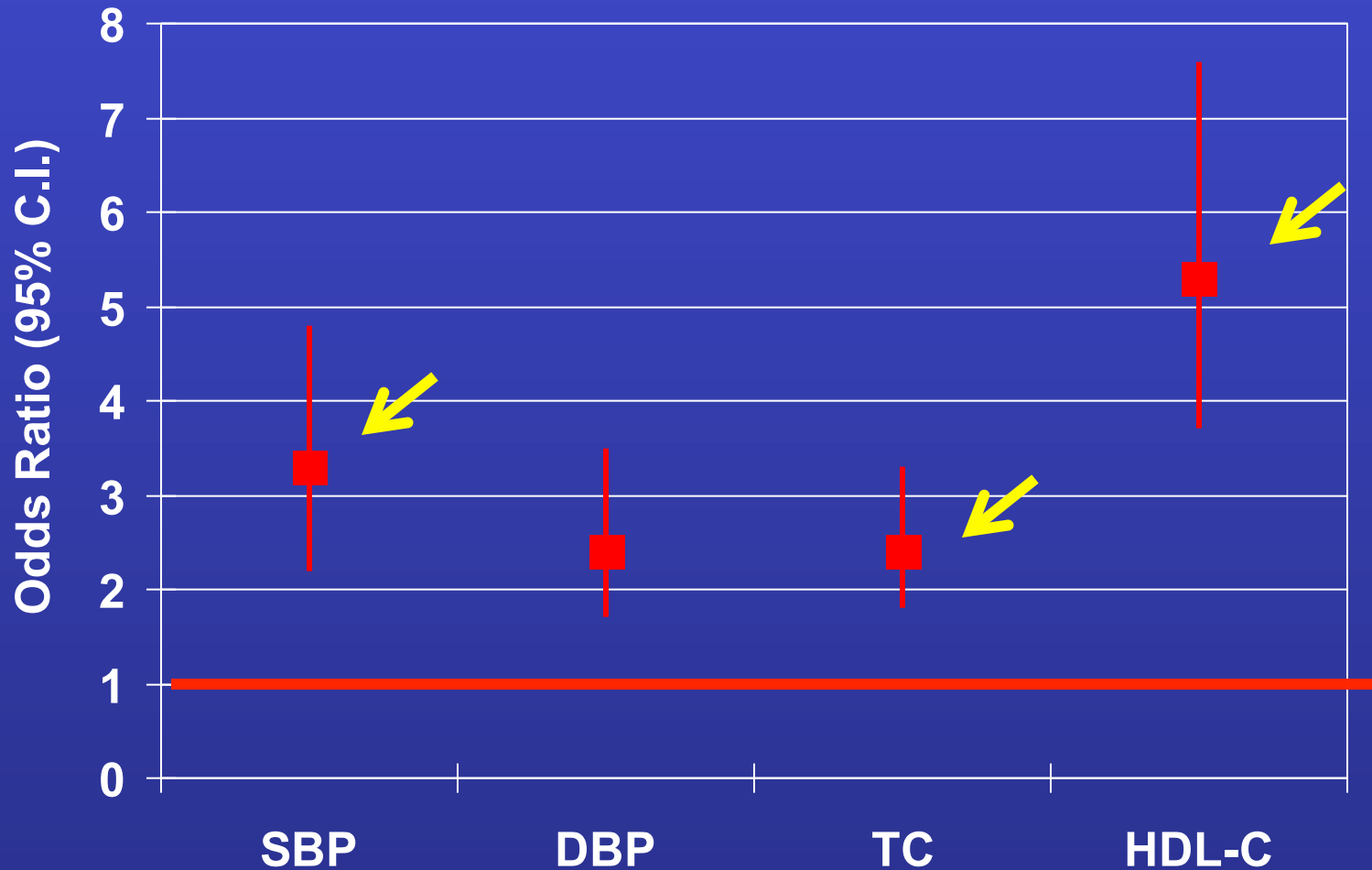
# CARDIAC Screening Results (1998-2015)

- LDL  $\geq$  160 mg/dL: 637 (1.1%)
- LDL  $\geq$  175 mg/dL: 248 (0.4%)
- LDL  $\geq$  190 mg/dL: 122 (0.2%)

n=60,404



# Risk Factor Clustering Among Obese Children



# Exploring the Morbidly Obese Diagnosis

RISK FACTOR	NORMAL OR UNDERWEIGHT	OVERWEIGHT	OBESE	MORBIDLY OBESE
Elevated Blood Pressure	14.4%	20.8%	29.8%	51.0%
Low HDL	9.7%	18.7%	30.5%	42.7%
Elevated LDL	5.9%	10.2%	13.3%	11.4%
Elevated Triglycerides	4.4%	12.4%	25.0%	31.3%
Positive for AN	.9%	3.5%	13.6%	39.6%

\* Ice et al., International Journal of Pediatric Obesity, 2009

# Universal versus Selective Screening: Testing Current NCEP Guidelines

**20,266 Subjects Tested**  
(5<sup>th</sup> Graders)

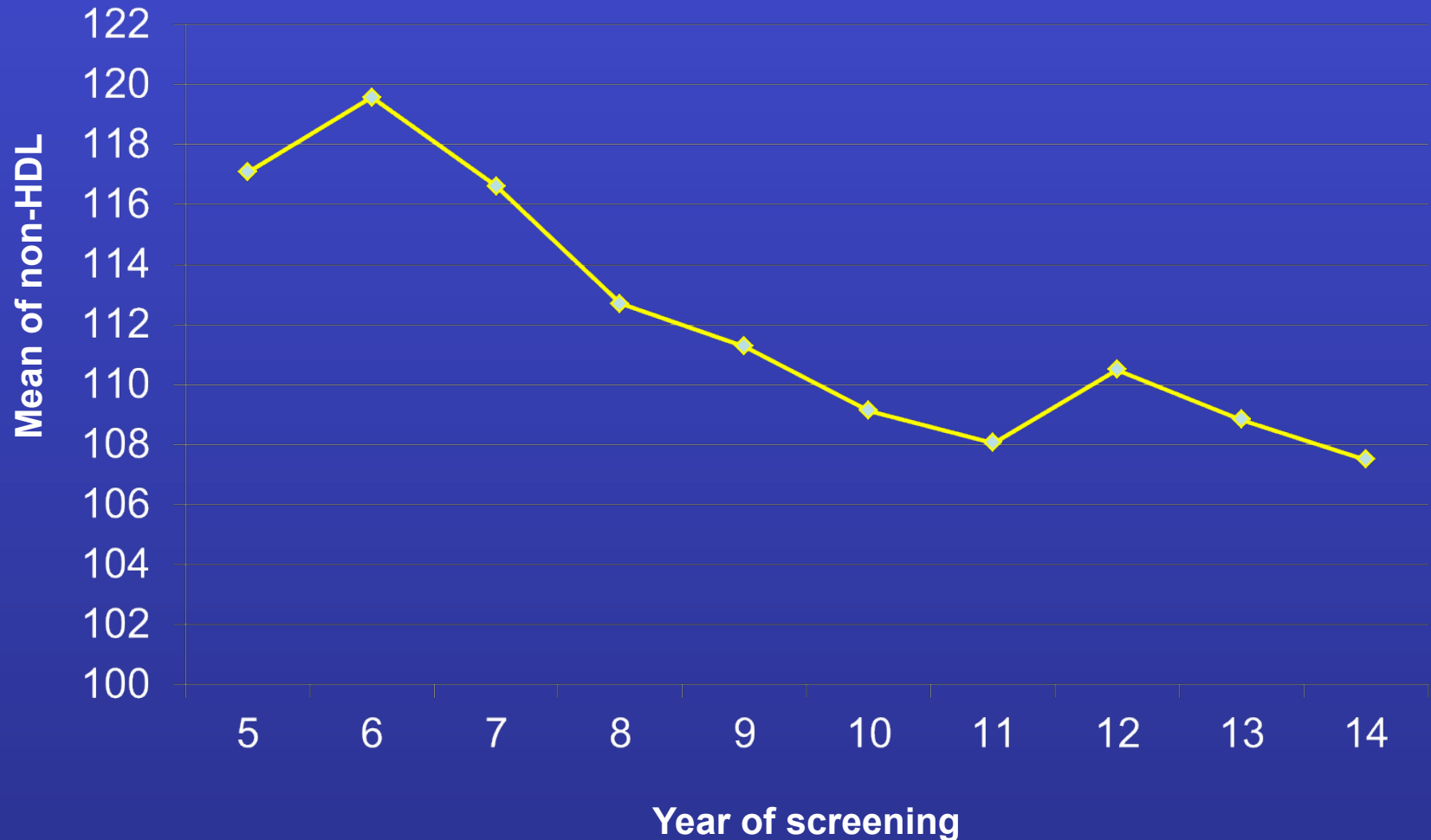
**14,468 met NCEP screening  
Guidelines (71.4%)**

**170 warrant pharmacologic tx**  
(1.2% of those who met  
NCEP guidelines)

**5,798 did not meet NCEP  
Screening guidelines (28.6%)**

**98 warrant pharmacologic tx**  
(1.7% of those who did not  
Meet NCEP guidelines)

# Mean non-HDL by year of screening





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