Childhood Obesity: Promising Prevention Strategies

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http://www.athlonelite.com/2009/10/ http://www.thacc.net/images/snack%20time.
http://www.nature.com/news/2010/100901/images/news.2010.445.gopher.jpg
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Our Sedentary World…

Prevalence of Obesity* Among U.S. Children and Adolescents (Aged 2–19 Years)

	Survey Periods			
	NHANES II 1976–1980	NHANES III 1988–1994	NHANES 1999–2002	NHANES 2003–2006
Ages 2 - 5	5%	7.2%	10.3%	12.4%
Ages 6 - 11	6.5%	11.3%	15.8%	17.0%
Ages 12 - 19	5%	10.5%	16.1%	17.6%

*Sex-and age-specific BMI ≥ 95th percentile based on the CDC growth charts

Sources:
Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among U.S. children and adolescents, 1999–2000. *JAMA* 2002;288:1728–1732.
Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Prevalence of overweight and obesity among US children, adolescents, and adults, 1999–2002. *JAMA* 2004;291:2847–2850.
Ogden CL, Carroll MD, Flegal KM. High Body Mass Index for Age Among US Children and Adolescents, 2003–2006. *JAMA* 2008;299:2401–2405.

Adolescent Boys
Prevalence of Obesity* by Race/Ethnicity
(Aged 12–19 Years)

	Survey Periods	
	NHANES III 1988–1994	NHANES 2003–2006
Non-Hispanic White	11.6%	17.3%
Non-Hispanic Black	10.7%	18.5%.
Mexican American	14.1%	22.1%.

*Sex-and age-specific BMI ≥ 95th percentile based on the CDC growth charts

Sources:

Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among U.S. children and adolescents, 1999–2000. *JAMA* 2002;288:1728–1732.

Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Prevalence of overweight and obesity among US children, adolescents, and adults, 1999–2002. *JAMA* 2004;291:2847–2850.

Ogden CL, Carroll MD, Flegal KM. High Body Mass Index for Age Among US Children and Adolescents, 2003–2006. *JAMA* 2008;299:2401–2405.

Adolescent Girls
Prevalence of Obesity* by Race/Ethnicity
(Aged 12–19 Years)

	Survey Periods	
	NHANES III 1988–1994	NHANES 2003–2006
Non-Hispanic White	7.4%	14.5%
Non-Hispanic Black	13.2%	27.7%
Mexican American	9.2%	19.9%

*Sex-and age-specific BMI ≥ 95th percentile based on the CDC growth charts

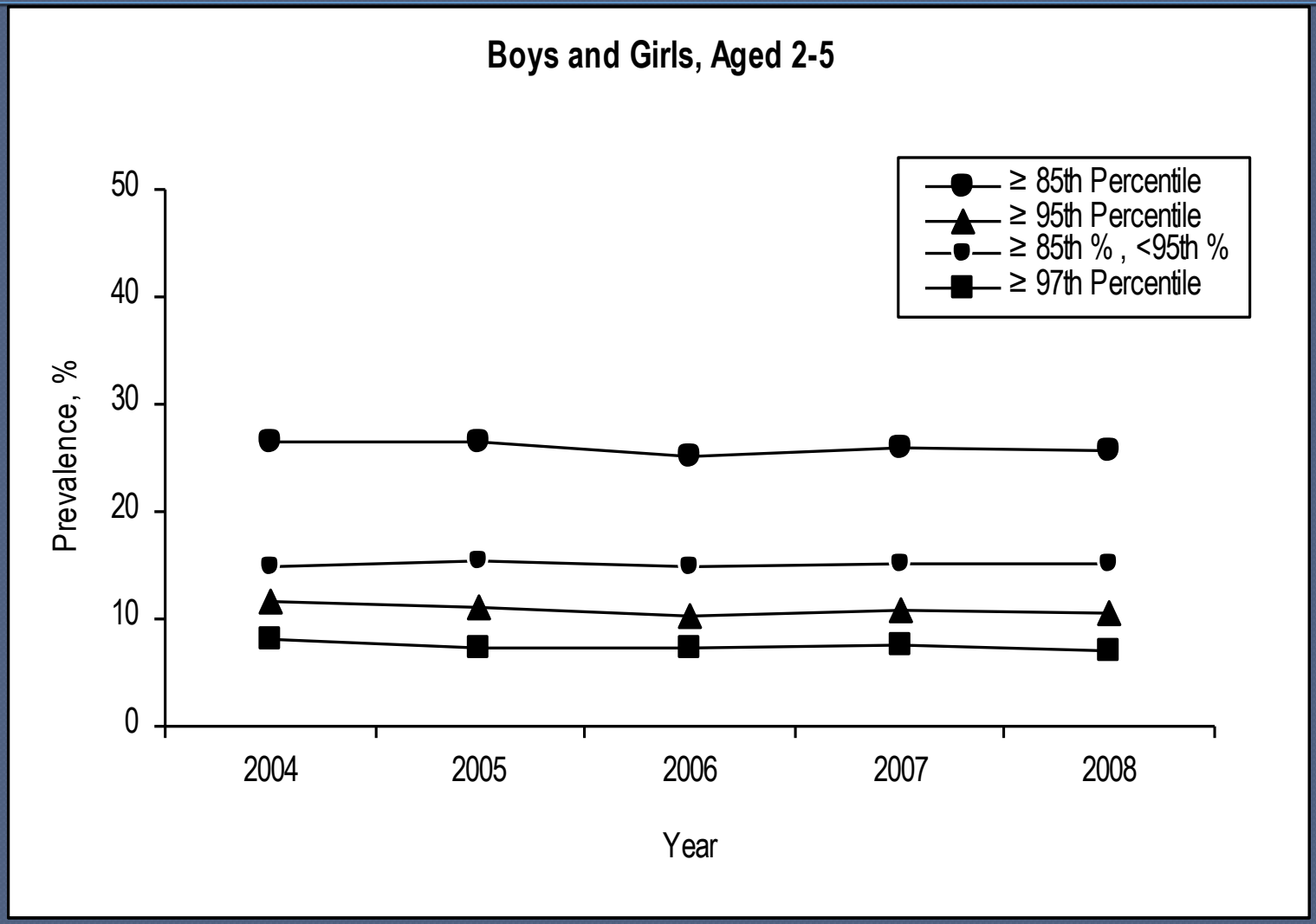
Sources:
Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among U.S. children and adolescents, 1999–2000. *JAMA* 2002;288:1728–1732.
Ogden CL, Carroll MD, Flegal KM. High Body Mass Index for Age Among US Children and Adolescents, 2003–2006. *JAMA* 2008;299:2401–2405.

Preschool Age Children (2-5 year olds) Prevalence of Obesity* by Race/Ethnicity

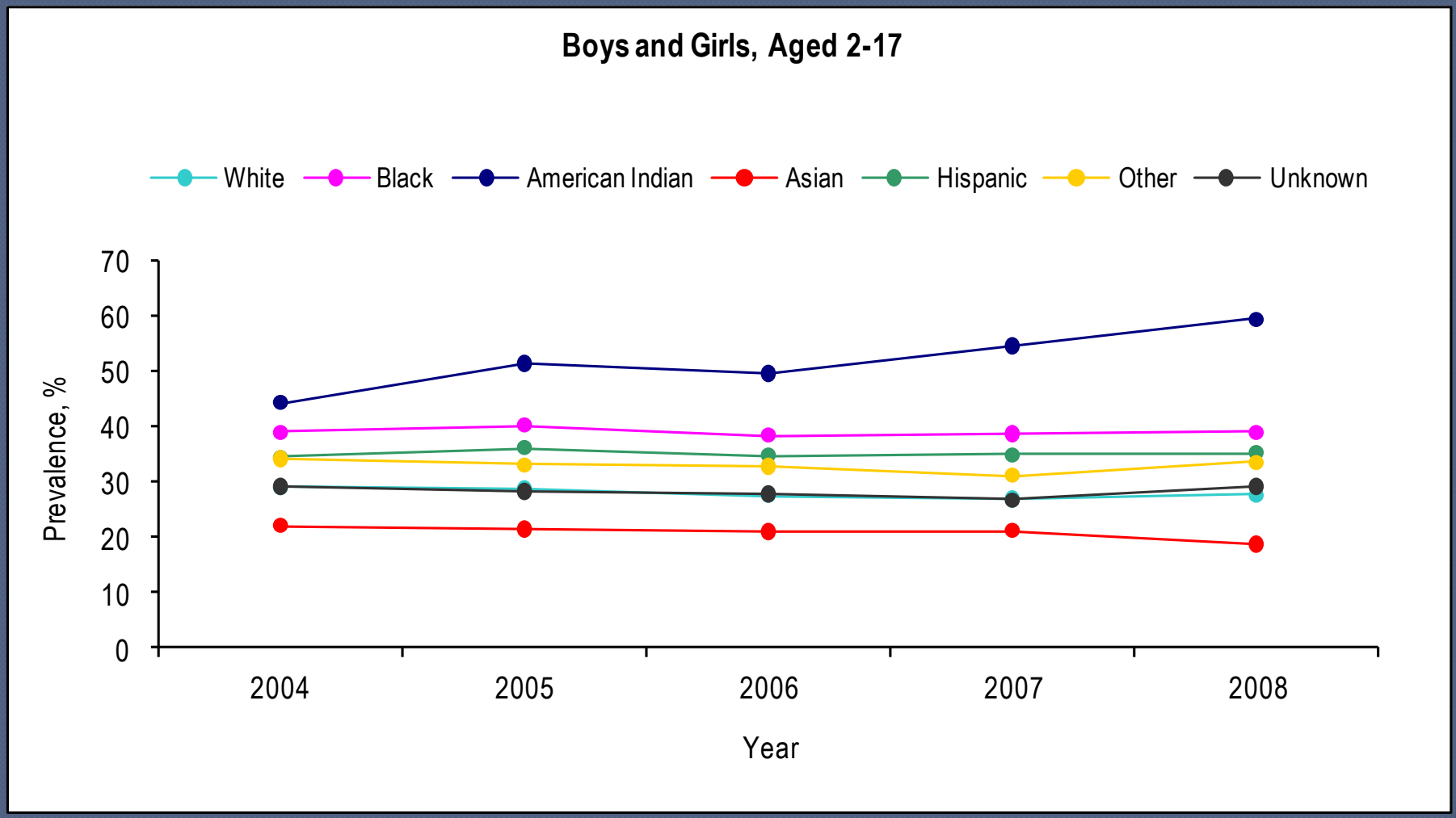
	NHANES 2003–2006
Non-Hispanic White	11.5%
Non-Hispanic Black	13.0%
Hispanic/Latino	19.2%

*Sex-and age-specific BMI ≥ 95th percentile based on the CDC growth charts

Twin Cities Metropolitan Area Clinics: Prevalence of High BMI for Age in Boys & Girls Aged 2-5, 2004-2008



Twin Cities Metropolitan Area Clinics: Prevalence of BMI ≥ 85th%ile in 2-17 Year Olds By Race/Ethnicity, 2004-2008

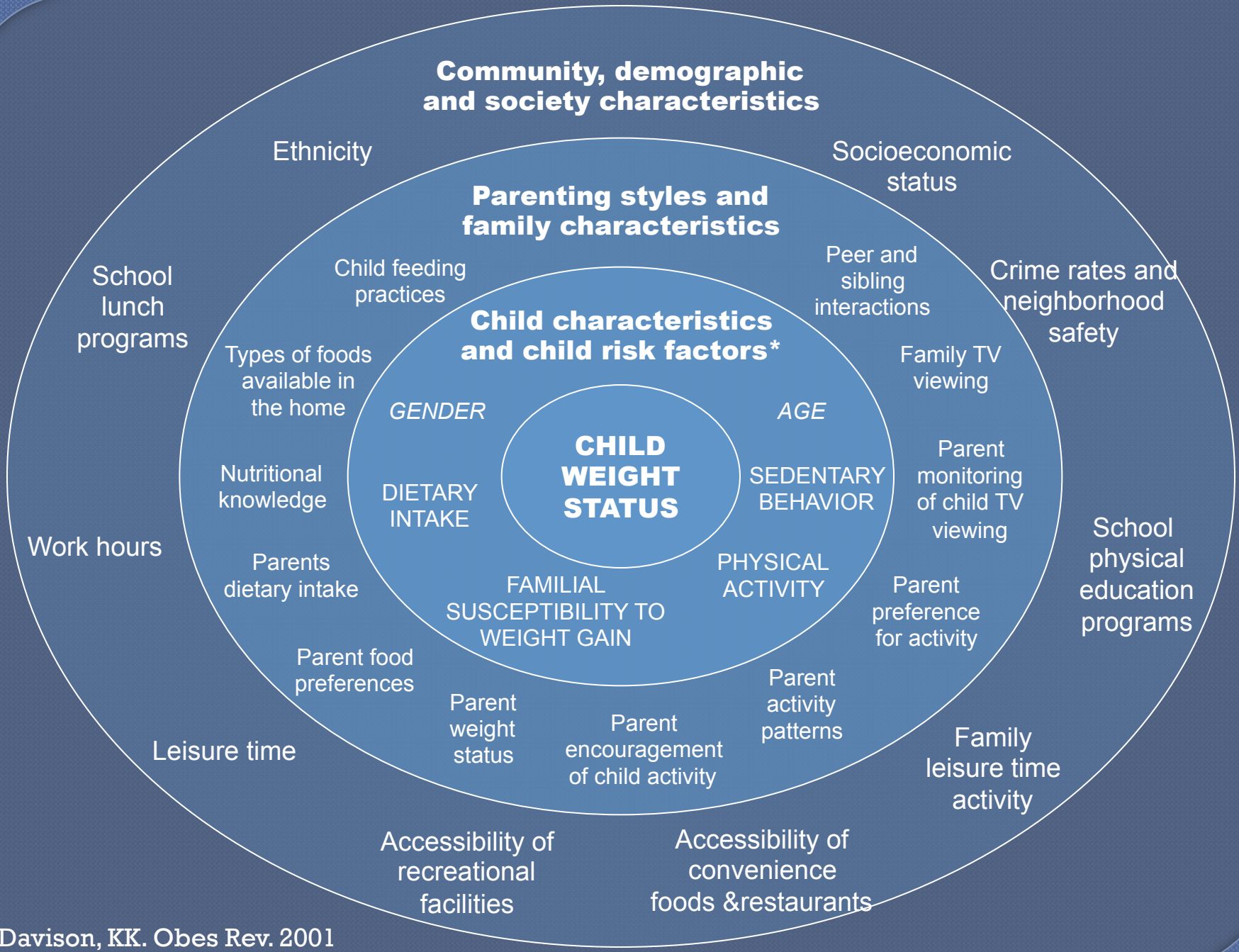


Why be concerned about child obesity?

- One-third of children in the US are overweight or obese.
- Children who were ever overweight during the preschool period are five times as likely to be overweight adolescents.
- Risk of persistence of overweight is 50% or greater after 6 years of age
- > 70% of overweight adolescents are expected to remain overweight as adults
- Risk of persistence increases with degree of adiposity and is greater if child has one or more obese parents

Childhood Overweight is a significant health problem…

- Between 1979 and 1999, rates of obesity and associated hospital discharge diagnoses tripled among 6-17 year olds.
- 60% of overweight youth have at least one additional cardiovascular disease risk factor.
- Type 2 diabetes (once called "adult-onset" diabetes) is becoming increasingly common in children; type 2 diabetes accounts for up to 45% of all new cases of diabetes in children.
- At the current rates of childhood obesity, 30 to 40% of today's children may eventually develop type 2 diabetes and reduce their life expectancy.



Davison, KK. Obes Rev. 2001

What have we learned from childhood obesity treatment?

- Premise of Family-based Treatment: Targeting the home environment and parenting practices is critical
- Epstein's parent-family-based obesity treatment produced impressive results.
  - At 10-year follow-up, 33% of children decreased their BMI by 20% or more and 30% were no longer obese.
- Work by Golan et al shows that targeting parents alone is an effective childhood obesity treatment strategy
  - At 7-year follow-up, obese children whose parents were the target of the intervention were less likely to be obese compared to children who were themselves the target of the intervention (e.g., 30% vs 69%).

Key Home Environment & Parenting Factors

- Food availability/accessibility
  - ↑ fruits and vegetables
  - ↓ sweetened beverages
  - ↓ high fat/calorie snacks (salty, sweet)
- Meal patterns
  - regular breakfasts
  - ↑ family meals
  - ↓ fast food, eating out
- Parent feeding practices
  - authoritative (in contrast to permissive/indulgent)
  - important distinction between "overt" and "covert" control
- Parent role modeling healthful eating practices

Key Home Environment & Parenting Factors

- Media availability/use/practices
  - ↓ television viewing
  - ↓ TV (and other electronic media) in child's bedroom
- Physical activity opportunities
  - media equipment
  - home equipment availability
  - outdoor play space
  - involvement in sports
- Encouragement/support for being active
- Parent role modeling

Most obesity prevention interventions …

- have been conducted in the school setting
- have been conducted in a single setting
- have used indirect methods to involve parents (e.g., newsletters sent home, occasional family events)
- How can we reach, engage, and support parents in obesity prevention efforts more effectively?
- How can we capitalize on the concept of "child as change agent"?
- How can we link intervention strategies to promote positive synergistic effects?

Health care visits… Missed opportunities?

- The pediatric primary care setting has been raised as a potentially important place to address obesity prevention
- The National Survey of Ambulatory Pediatric Visits showed that obesity was diagnosed at .93% of all well child visits, despite a prevalence rate of 15%
- Barriers to addressing obesity: lack of time, training, reimbursement, patient motivation, and effective treatment
- There is much room for improvement with respect to systematically addressing obesity and developing cost-effective approaches to obesity management that augment the role of providers

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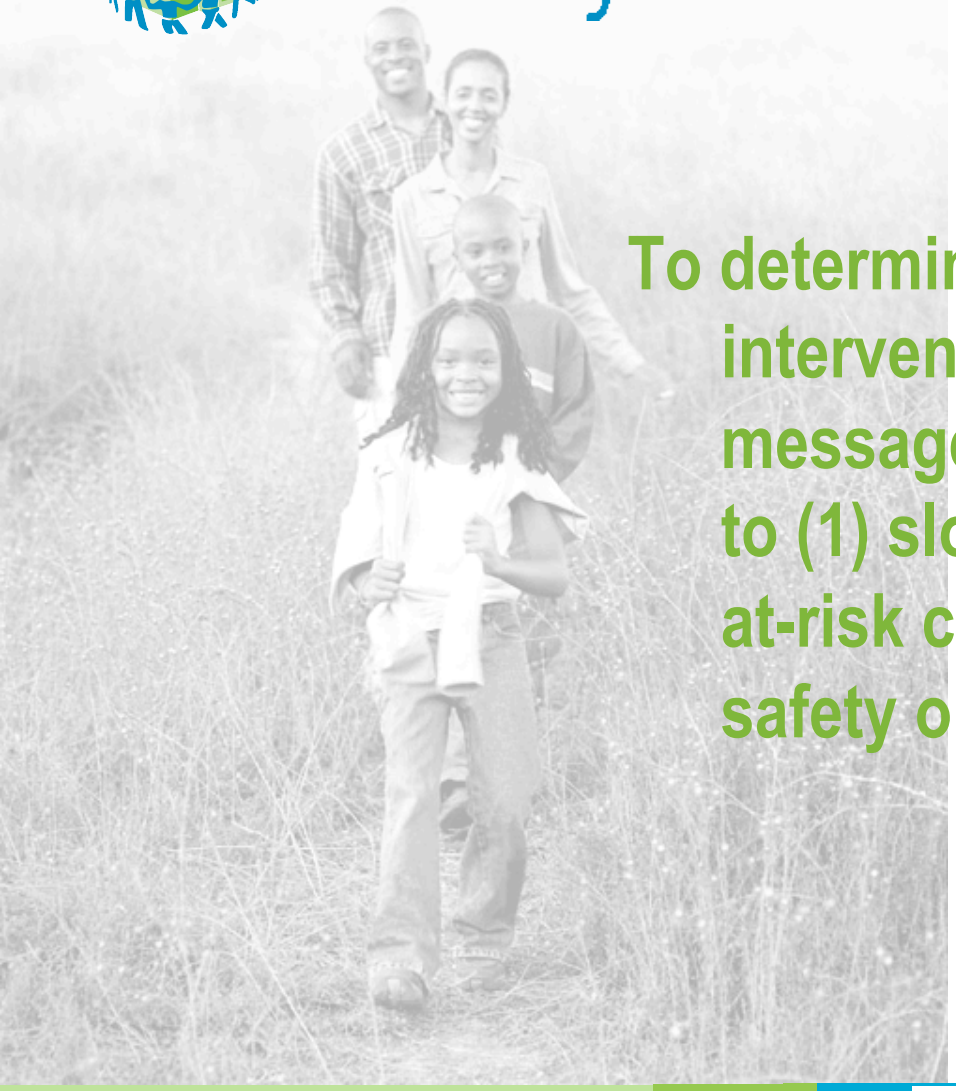
Study Goal



To determine the effectiveness of interventions that combine PCP messages & phone-based programs to (1) slow unhealthy weight gain in at-risk children *and* (2) improve safety outcomes

NIDDK National Institute of Diabetes and Digestive and Kidney Diseases

Supported By:
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R21 DK078239-01A2

University of Minnesota | HealthPartners Research Foundation | University of Washington

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Body Mass Index (BMI)

Recruiting children "at-risk" for obesity…

I. Age 5-9 Full Scale Study

- 70th-95th BMI percentile

II. Preschool (Age 2-4) Pilot Study

- 85th-95th BMI percentile OR
- 50th-85th BMI percentile and an overweight parent

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Intervention Groups

Comparing outcome variables of two groups…

I. Healthy Eating and Physical Activity
"Busy Bodies / Better Bites"

II. Safety and Injury Prevention
"Healthy Tots / Safe Spots"

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5-9 Timeline

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Study Flow

Recruitment

400 “5-9” families recruited at all HPMG clinics
(March ‘10 – March ’12)

60 “Preschool” families recruited at a subset of clinics

All families scheduled for well-child visit &
recent BMI in the “at-risk” range.

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Study Flow

Recruitment

Receiving PCP approval for participation…

EPIC Inbasket message (discussion of logistics)

3 business days for response and reason if excluded

PCP endorsement of study on recruitment letter

Family phone screen to confirm eligibility

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Study Flow

Recruitment

Home Visit

Child BMI measured to confirm eligibility

Parent consent & child assent

Information about health / safety factors

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Study Flow

Recruitment

Home Visit

Well-Child Visit

PCP / Family interaction- discussion of logistics

Randomized after well-child visit

Followed by phone coaching

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Your Role

I. Start the conversation with parents

II. Reinforce obesity prevention & safety messages

III. Answer initial questions about healthy behaviors

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Family Pamphlet

Given to PCP team by study staff after measuring and recording BMI …

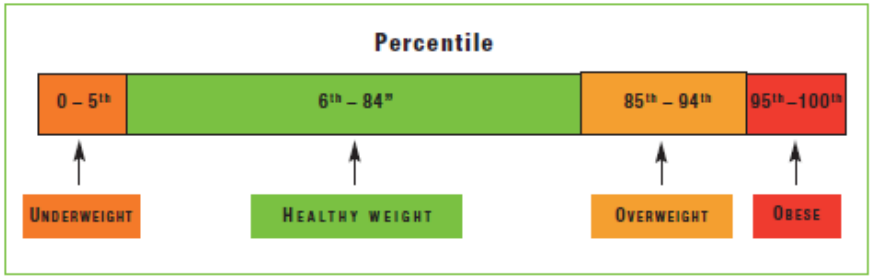
I. Safety Tips

II. BMI Percentile

III. Activity/Eating Tips

Your child's height is_____, weight is_____, and Body Mass Index (BMI) percentile is_____.

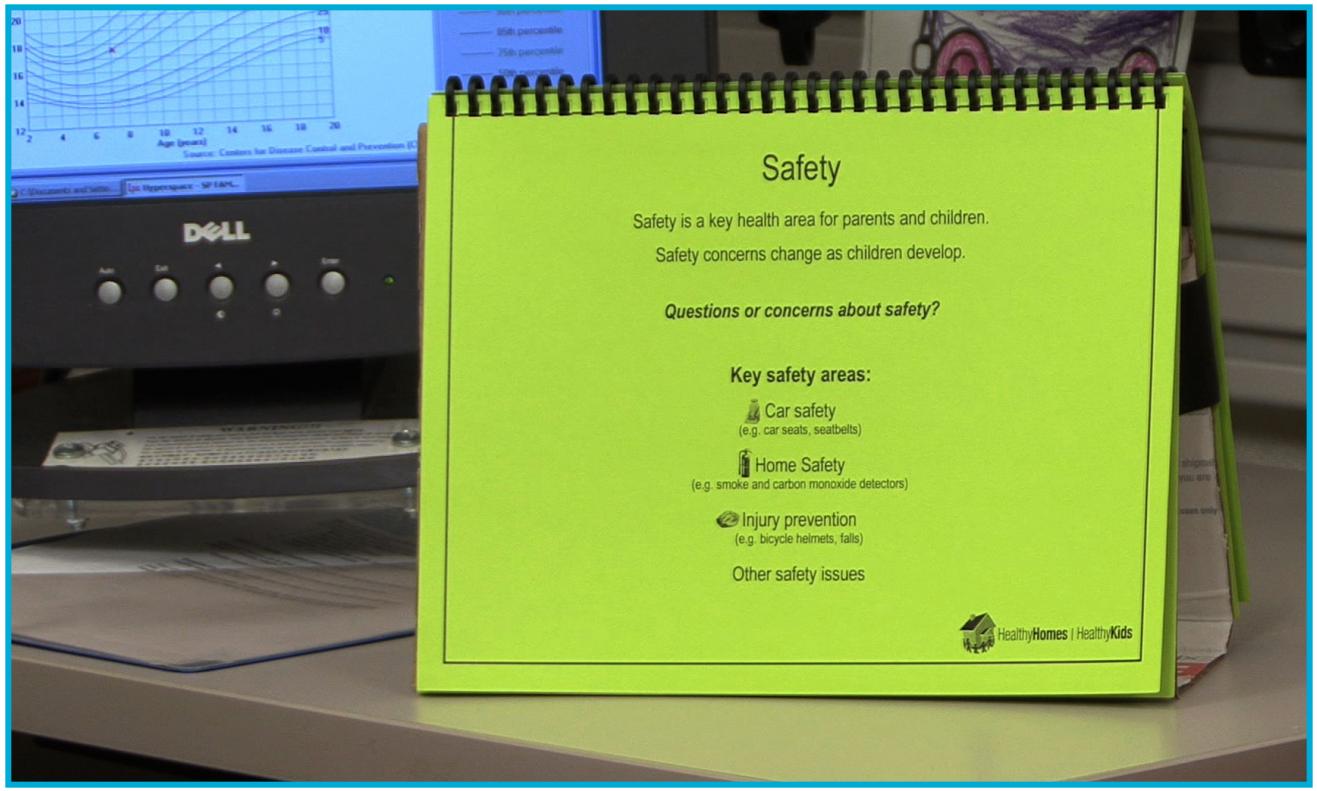
Your child's BMI percentile helps show whether he/she is at a weight that, in the future, will contribute to their being healthier. A BMI at the 85th percentile or higher is considered overweight.



University of Minnesota
HealthPartners Research Foundation
University of Washington

HealthyHomes | HealthyKids Flipchart

Developed to allow flexibility while guiding the interaction…



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PCP / Family Interaction

The interaction is flexible in multiple ways…

I. **Delivery style and order**
   (safety first OR BMI/activity/eating first)

II. **Number of key behavior areas discussed**
   (one or multiple)

III. **Topics can be discussed in conjunction with other visit activities to minimize time**

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Interaction Components

I. Introduction acknowledging study (provide family pamphlet)

II. Safety Component

III. BMI / Activity / Eating Component

IV. Conclusion

NET-WORKS

NOW EVERYBODY TOGETHER
FOR AMAZING AND HEALTHY KIDS

Grant Details

- National Institute of Child Health &Human Development (NICHD) & National Heart, Lung, & Blood Institute (NHLBI)
- Childhood Obesity Prevention and Treatment Research Consortium (COPTR):
  - 2 prevention trials (University of Minnesota & Vanderbilt)
  - 2 treatment trials (Case Western & Stanford)
  - Coordinating Center: University of North Carolina, Chapel Hill
- 7 years of funding
  - 3 phases: Pilot/Main Study/Evaluation & Sustainability

Staff & Collaborators

- University of Minnesota
  - Simone French, PhD, Co-Principal Investigator
  - Sara Veblen-Mortenson, MPH/MSW, Project Director
  - Annie Hotop (Recruitment), Nathan Mitchell (Evaluation), Anne Gerlach (Intervention) Co-I's: Division of Epidemiology & Community Health (Neumark-Sztainer), Departments of Family Medicine & Community Health (Berge, Stovitz), Health Disparities (Nanney),
- HealthPartners Research Foundation
  - Nancy Sherwood, PhD, Co-Principal Investigator
  - Lauren Crain, PhD, Co-I
  - Meghan Senso (Process Evaluation)
- Health Care Collaborators
  - Children's Hospital of Minnesota Clinics
  - HealthPartners Medical Group Clinics
  - University of Minnesota-Affiliated Family Medicine Clinics
- Community Collaborators
  - Early Childhood Family Education
  - Minneapolis/St. Paul Parks and Recreation
  - YMCA and Cities of Minneapolis and St. Paul

Study Goal

- To evaluate the effects of a three-year multi-level, multi-setting parent-targeted intervention on the primary outcome, child BMI, compared to a standard primary care only intervention.

Parenting classes: A community-based resource focused on parenting practices & the home

Minnesota offers the longest publicly funded parenting program, Early Childhood and Family Education (ECFE).

ECFE classes are offered through the public school system to help parents develop school readiness in their child; build parenting skills and social support networks with other parents.

ECFE provides culturally tailored parenting classes, translated materials and active in-class translation and free transportation as needed; parents in lower-income neighborhoods are actively recruited

An ECFE staff person maintains regular weekly telephone contact with each parent and also make home visits to assist the parent with assessment and referral to social services.

Parenting classes: A community-based resource focused on parenting practices & the home

- School readiness is a broad behavioral target and includes child social and behavioral development.
  - Healthy food choices, active play and limited television viewing and screen time are topics that fit well within the ECFE parenting curriculum.

- ECFE classes offer an existing parent-focused program in the community that has potential to dovetail with the obesity prevention messages.

- Parents are familiar with and accepting of the one-to-one role ECFE parent educators play as part of the program that includes home-based visits and regular telephone contact.

What about the neighborhood environment?

- A third level of influence is the community context in which the family lives, works and plays.
- Neighborhood availability of attractive and affordable retail food outlets and sports and recreational resources are key aspects of promoting healthy eating and physical activity
- However, parents need to be connected directly with community food and recreation resources.
- Improving the availability of community resources and providing incentives to parents to link with these resources is a promising intervention strategy.

Linking the 3 Intervention Levels

- A "family advocate" can
  - maintain communication, coordinate resources and sustain consistent behavior change messages with parents
  - foster a supportive relationship that provides ongoing motivation and reinforcement for changes in parenting behaviors and the home environment
- The family advocate has the ability to address the whole child health by assisting parents with connecting with other health, social and economic public resources.

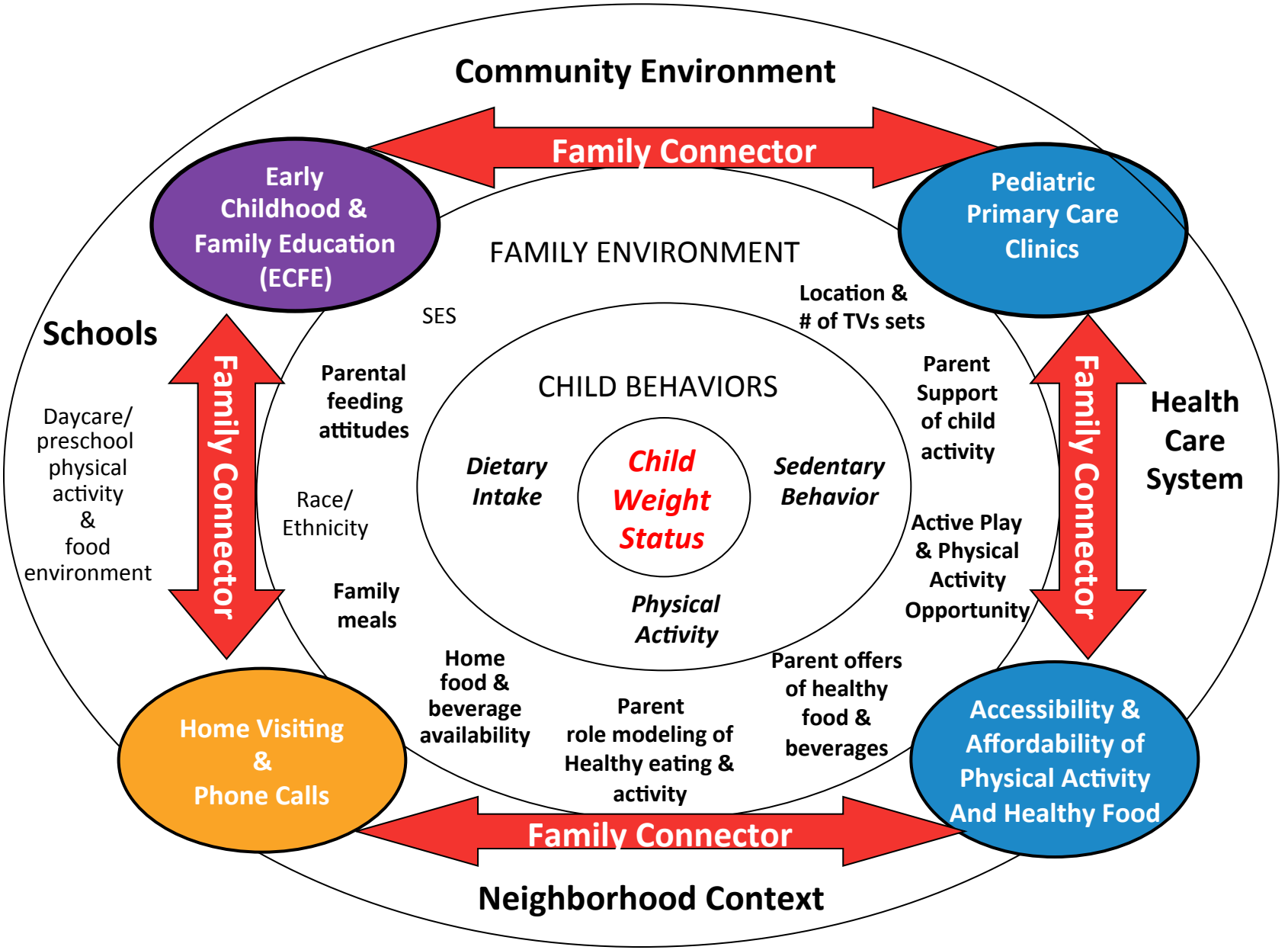
Eligibility Criteria

- Families living in Mpls & St. Paul
  - Multicultural; Somali , Hispanic , Hmong, Caucasian, African American
- Child 2-4 years old
- At or above the 50th BMI percentile for age and gender
- No conditions or medications affecting growth

Ongoing Pilot Study (n=40)

Full Scale Trial (n=500)

Social Ecological Model for Child Obesity Prevention



NET-WORKS
NOW EVERYBODY TOGETHER FOR AMAZING AND HEALTHY KIDS

Timeline and Study Components

Phase I (Pilot) & Phase II (Intervention)		
Study Element	**Phase I (Pilot Study)**	**Phase II (Intervention)**
Duration	6 months June 2011 – Jan/Feb 2012	3 years 2012 – 2015
Sample Size	40 parent/child dyads	500 parent/child dyads
Recruitment	3 Clinics: Mpls (2) & St. Paul (1)	10 Clinics
Intervention		
Pediatric Primary Care	• Initial Well Child Visit intervention	• Initial Well Child Visit intervention • Annual Well Child visit check-in
Early Child Family Education (ECFE)	(Per intervention family) • 12 session parent class series	(Per intervention family) • Year 1: 12 session class series • Year 2: 1 refresher class series • Year 3: 1 refresher class series
Physical Activity & Nutrition Environmental Resource	(Per intervention family) • 1 food initiative per neighborhood • 1 activity initiative per neighborhood	(Per intervention family) Years 1-3 • 2 food & 2 activity initiatives per neighborhood/year
Family Connector	(Per intervention family) • 3 phone coaching calls • 6 home visits	(Per intervention family) Years 1-3 • Monthly phone coaching calls • Quarterly home visits

Future directions for childhood obesity prevention

- Working with parents to modify the home environment to promote healthy eating and physical activity is key
- Strategies which capitalize on child as the "change agent" can be effective for motivating parents
- Active behavior change methods are preferable to education alone
- Reaching and engaging parents can be challenging:
  - Where do parents spend their time?
  - What is the optimal balance between intensity and effectiveness?
  - What are the optimal treatment modalities (in person, phone, web)?
  - How should we be framing obesity prevention interventions?

QUESTIONS?