Childhood Obesity: Challenges and Solutions for Today and Tomorrow

September 21, 2010

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dell children’s medical center of central texas
A member of the Seton Family of Hospitals
Disclaimer

- I have no financial relationships to disclose, nor will be commenting on any off label use of pharmaceuticals.

- Use obesity as a medical term
Objectives

• Understand the importance and health impacts of obesity
• Understand a brief behavior change framework for making healthy changes
• Identify potential policy and environmental changes
• Learn about Dell Children’s obesity programs
Obesity: Is there a problem?
Obesity Trends* Among U.S. Adults
(*BMI ≥30, or about 30 lbs. overweight for 5’4” person)
Obese Adults Aged ≥20 Years, 2007

Age-adjusted percent of adults ≥20 years old who are obese

- 0 - 26.2
- 26.3 - 27.7
- 27.8 - 29.1
- 29.2 - 30.8
- ≥ 30.9

MMWR 58:1259-1263, 2009
Diabetic Adults Aged ≥20 Years, 2007

MMWR 58:1259-1263, 2009
Costs of Obesity

$75 billion: Annual U.S. medical expenditures attributed to obesity in 2003
  - In Texas due to overweight and obesity 2001: $10.5 billion

Obese people spent 37% more on health care costs

For Youth (6-17 years) between 1979 and 1999:
  - Hospital discharges for diabetes were nearly 2x
  - Sleep apnea increased 5x

• Projected costs for 2040 in Texas: $39 billion in Texas

Sources: Surgeon General’s Report on Obesity, 2001; Finkelstein et al., 2004; Thorpe et al., 2004; Wang & Dietz, 1999-2002
And back to Texas...

<table>
<thead>
<tr>
<th>Prevalence of Obesity^</th>
<th>Among US Adults, 2007*</th>
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<tbody>
<tr>
<td>15%–19%</td>
<td>1 state</td>
</tr>
<tr>
<td>20%–24%</td>
<td>20 states</td>
</tr>
<tr>
<td>25%–29%</td>
<td>27 states</td>
</tr>
<tr>
<td>≥30%</td>
<td>3 states</td>
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</table>

^Body Mass Index (BMI) ≥30

*Includes District of Columbia

Texas
28.1%
Why does it matter?
No longer an adult problem...

- **Charlie**
  - 19 years old
  - Straight A college student
  - Bright future
  - Morbidly obese
  - Walks into emergency department with trouble breathing
  - **Dead** a week later
Three boys with BMI values from normal weight to obese

55th%ile  75th%ile  95th%ile
BMI: the New Vital Sign

• Denotes high weight from both high lean body mass and high body fat

• Is BMI inaccurate since it doesn’t distinguish children who have high lean mass?
Calculate your BMI

- To calculate your body mass index (BMI)
  
  Weight in kilos / height in meters squared
  
  or
  
  Multiply your weight (in pounds) by 700 and divide by your height (in inches) squared \((\text{Weight} \times 700/\text{height}^2)\)
  
  or
  
  Google “BMI calculator”
## BMI Categories for Adults

<table>
<thead>
<tr>
<th>At a BMI</th>
<th>You are considered:</th>
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<tbody>
<tr>
<td>Below 18.5</td>
<td>Underweight</td>
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<tr>
<td>18.5 to 24.9</td>
<td>Normal</td>
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<tr>
<td>25 to 29.9</td>
<td>Overweight</td>
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<tr>
<td>30 to 34.9</td>
<td>Mildly obese</td>
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<tr>
<td>35 to 39.9</td>
<td>Moderately obese</td>
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<tr>
<td>40 and above</td>
<td>Extremely obese</td>
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For Children, BMI Differs by Age

Example: 95th Percentile Tracking

<table>
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<tr>
<th>Age</th>
<th>BMI</th>
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<tbody>
<tr>
<td>2 yrs</td>
<td>19.3</td>
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<tr>
<td>4 yrs</td>
<td>17.8</td>
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<tr>
<td>9 yrs</td>
<td>21.0</td>
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<tr>
<td>13 yrs</td>
<td>25.1</td>
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</table>

Source: CDC Growth Chart Slides
“My child is not overweight, they’re just muscular”
Why is this happening to us?

- Long-term positive energy balance
IOM Comprehensive approach for preventing and addressing childhood obesity

Energy Balance

SOURCE: Institute of Medicine, Progress in Preventing Childhood Obesity, 2007, pg 20.
Toxic Environment

- Environmental factors:
  - Availability and affordability of high fat/high carbohydrate food (fast food, soft drinks)
  - Marketing to children
  - Fewer family meals
  - TV/computers/video games
  - Safety issues
  - Decrease in physical education time

Brownell, 1994
# Daily Caloric Needs

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<td>Sedentary</td>
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<tr>
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<tr>
<td>Females</td>
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<tr>
<td>4–8 years</td>
<td>1,200</td>
<td>1,800</td>
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<tr>
<td>9–13</td>
<td>1,600</td>
<td>2,200</td>
<td></td>
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<tr>
<td>14–18</td>
<td>1,800</td>
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<td>19–30</td>
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<td>31–50</td>
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<td>51+</td>
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<td>Males</td>
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= 1530 Kcal
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- Learn about Dell Children’s obesity programs
Motivational Interviewing

• “...a client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence.”

- Miller & Rollnick, 2002
Applications of Motivational Interviewing (MI)

- **Risk Behaviors**
  - Alcohol and other drug addictions
  - Smoking
  - HIV risk behaviors
  - Eating disorders

- **Adopting healthy behaviors**
  - Physical activity
  - Fruit and vegetable consumption
Common Approaches to Behavior Change

• Advice
  – Can elicit resistance, especially when unwelcome

• Information
  – Knowing what to do weakly correlated with actually doing a behavior

• Motivation
  – People vary in level of motivation
  – Style must match motivation
Common Approach

- Confrontation
- Education
- Authority

Spirit of MI

- Collaboration
- Evocation
- Autonomy
Spirit of Motivational Interviewing

- **Collaboration**
  - We have expertise, the patient is the expert

- **Evocation**
  - Eliciting, not just telling
  - Discover the motivation for change from within the person and evoke it

- **Autonomy**
  - Only the client can decide
  - Curiosity, not authority
Sample Questions

• What is difficult about drinking less soda?
• What would be good about cutting back your smoking?
• In what ways do you think Sandy’s weight is a problem for her?
• What are your concerns about her behavior?
Further Reading

Motivational Interviewing
Preparation of People for Change
William R. Miller
Stephen Rollnick
Second Edition

Motivational Interviewing in Health Care
Helping Patients Change Behavior
Stephen Rollnick, William R. Miller, Christopher C. Butler
Other resources

• [www.motivationalinterviewing.org](http://www.motivationalinterviewing.org)

• Motivational Interviewing Network of Trainers
  – Cathy Cole
  – [www.cathycoletraining.com](http://www.cathycoletraining.com)
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Energy Intake

Energy Expenditure

Energy Balance

Social Norms and Values

Sectors of Influence

Behavioral Settings

Individual Factors

Food & Beverage Intake

Physical Activity

Energy Intake

Energy Expenditure

Communities

- Governments

- Public Health

- University

- Health Care

- Agriculture

- Education

- Media

- Land Use and Transportation

- Communities

- Foundations

- Industry

Demographic Factors (e.g., age, sex, SES, race/ethnicity)

- Demographic Factors

- Psychosocial Factors

- Gene-Environment Interactions

- Other Factors

Worksites

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Health Care

- Schools and Child Care

- Health Care

- Demographic Factors

- Psychosocial Factors

- Gene-Environment Interactions

- Other Factors

Schools and Child Care

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Home

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Other Factors

- Demographic Factors

- Psychosocial Factors

- Gene-Environment Interactions

- Other Factors

Government

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Public Health

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

University

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Health Care

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Agriculture

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Education

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Media

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Land Use and Transportation

- Government

- Worksites

- Health Care

- Schools and Child Care

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Communities

- Government

- Worksites

- Health Care

- Schools and Child Care

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Foundations

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Industry

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Food

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Beverage

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Retail

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Leisure and Recreation

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

Entertainment

- Government

- Worksites

- Health Care

- Schools and Child Care

- Home

SOURCE: Institute of Medicine, Progress in Preventing Childhood Obesity, 2007, pg 20.
Local Level Data

- CDC County Level Data

- The Food Atlas
Austin ISD

- For 2007-2008, of 43,967 students 3rd-12th grade
  - 85 to <95th %tile: 7,217
  - 95 to <99th %tile: 6,299
  - >= 99th %tile: 1,669
  - Total: 35%
Five-Two-One-Almost None

Nemours Health and Prevention Services is committed to helping people understand the causes and implications of being at an unhealthy weight. 5-2-1-Almost None is our way to promote a healthier lifestyle for children and families. It’s as simple as following these suggestions and tips for healthier eating and physical activity:

**FRUITS AND VEGETABLES**

Five stands for five or more servings of fruits and vegetables per day. Fruits and vegetables are packed with disease-fighting nutrients and give you energy, naturally.

- Serve at least one fruit or vegetable at every meal and snack. Try all the different colors.
- Dip veggies in low fat dressing. Tuck them in whole wheat pita. Toss some on your pizza.
- Try and try again. It may take children several tastings (10 or more) before they begin to enjoy certain foods.

**HOURS OF SCREEN TIME**

Two stands for no more than two hours per day in front of a screen (TV, video games, and recreational computer tasks). A number of studies show a correlation between watching television and obesity.

- Be a role model – limit your own screen time. Play, take a walk, or cook with your kids instead.
- Keep the TV in a central location and out of your child’s bedroom.
- Turn off the TV during dinner and take time to talk about your day.

**HOUR OF PHYSICAL ACTIVITY**

One means at least one hour of physical activity per day. Physical activity, especially when it gets the heart pumping faster, is vital to maintaining a healthy weight and overall good health. Kids who are raised in active families tend to stay active as adults.

- Plan one physical activity for the family each weekend. Let each child take turns choosing the activity.
- There are lots of ways to be active — walking, dancing, gardening, and sewing teaches can all get your heart pumping.
- 10 minutes here, 10 minutes there — and before you know it, you’ve been moving your body for an hour.

**SUGARY DRINKS**

Almost none refers to almost no sugary beverages — no more than two servings per week of soft drinks, sports drinks, and fruit drinks that are not 100% fruit juice. Over the last few decades, soda consumption has doubled for girls, tripled for boys.

- Choose water. Add a lemon or lime wedge or a splash of juice for flavor.
- Drink water, milk, and juice yourself. Your children learn by watching you.
- Avoid bringing sodas and sports drinks home. If it’s there, the kids will drink it.

**About NHPS**

Nemours Health and Prevention Services (NHPS), a non-profit organization based in Newark, Delaware, works with families and community partners to help children grow up healthy. Our goal is to drive long-term changes in policies and practices that promote child health and to leverage community strengths and resources to have the greatest impact on the most children. One of our initial areas of emphasis is childhood obesity prevention through promotion of healthy lifestyles, the centerpiece of which is the 5-2-1-Almost None campaign.

NHPS is the newest division of Nemours, one of the nation’s largest pediatric health systems, operating the Alfred I. duPont Hospital for Children and outpatient facilities throughout the Delaware Valley and northern and central Florida. NHPS expands Nemours’ reach beyond clinical care to consider the health of the whole child within his or her family and community.

www.GrowUpHealthy.org

www.dellchildrens.net/healthyliving
Fact Sheet for Parents
GROWING UP HEALTHY

Did you know that...
Citrus fruits are the most widely grown crops in the entire world? Strawberries are grown in every state in the U.S. and every province in Canada? A serving of fruit is 1/2 cup chopped fruit, 1/4 cup dry fruit, one medium fruit, or 1/2 cup fruit juice? Or that a serving of vegetables is one cup leafy greens, 1/2 cup chopped raw or cooked vegetables, or 1/2 cup vegetable juice?

Strive to make sure your child eats at least FIVE or more servings of fruits and vegetables per day!
Fruits and vegetables are essential for a growing child's daily diet. Naturally low in calories and fat, they're a healthy choice anytime. Fruits and vegetables are also full of water and fiber—so they help us achieve and maintain a healthy weight because they fill us up and regulate digestion.

What's more, the phytochemicals (fight-o-chemicals), vitamins, and minerals in fruits and vegetables work together with fiber to benefit your health in many ways. Phytochemicals are what give fruits and vegetables their colors—that's why it's important to eat a variety of colorful produce every day.

See how colorful you can make your dinner table!
Try some fruits and vegetables like these:
- Red peppers, red onions, beets, red cabbage, kidney beans, apples, pink grapefruit, red grapes, strawberries, cherries, watermelon, raspberries, cranberries, pomegranates, tomatoes, spaghetti sauce, tomato juice, and tomato soup
- Carrots, summer squash, corn, sweet potatoes, butternut squash, pumpkin, yellow peppers, rutabagas, cantaloupe, grapefruit, lemons, nectarines, oranges, peaches, pineapples, tangerines, apricots, mangos, and papayas
- Leafy greens, asparagus, green peppers, broccoli, green beans, peas, cabbage, green onion, brussels sprouts, okra, zucchini, green apples, green grapes, honeydew melon, kiwifruit, and limes
- Eggplant, purple grapes, plums, raisins, blueberries, blackberries, purple figs, dried plums, and black currants
- Cauliflower, mushrooms, white beans, onions, garlic, parsnips, shallots, turnips, ginger, jicama, bananas, and pears

http://www.dellchildrens.net/healthyliving
Are canned or frozen fruits and vegetables as healthy as fresh ones?

Yes! Most frozen, canned, and dried fruits or vegetables can be as nutritious as fresh produce. In some cases, when produce is frozen immediately after it’s harvested, it can have more nutrients than fresh. So don’t worry about your kids snacking on a small amount of dried fruit or heating up frozen veggies for dinner. They are all good choices and count towards the recommended five servings a day. When you do choose frozen, canned, or dried products, though, try to choose those without added sugars, sauces, or seasonings.

Help your kids get their fruits and vegetables even when you’re on the run.

If you make the right choices, you can even get fruits and vegetables at a fast food restaurant! Instead of burgers and fries, try salads with grilled chicken, low-fat fruit and yogurt parfait, or apple-dippers with low-fat caramel dip.

Tips for filling your family’s diet with fruits and vegetables

- Get your kids involved by letting them pick out vegetables they like to eat at the grocery store. Ask them to find a new one for your family to try every week.
- Add vegetables to foods you already make, like scrambled eggs or omelets, pizza, sandwiches, lasagna, pasta dishes or pasta sauce, and casseroles. Finely chopped vegetables are hard for kids to pick out.
- Have fruits and vegetables in children's sight on the counter or in the fridge.
- Chop up vegetables so they're easy to grab and ready to eat. In fact, get your kids involved in washing, chopping, and cooking fruits and vegetables. They love to eat what they help fix, and once they learn how to do it, there's less work for you!
- Serve fruits and vegetables raw; kids often like crunchy textures.
- Offer new fruits and vegetables and old favorites together. It can take more than 10 tries for a child to like a new food, so if they don't like it the first time, try it again next week!
- Offer peanut butter, low-fat dips and dressings, or low-fat cheese along with fruits and veggies.
- Add berries, bananas, or other brightly colored fruits to cereal, pancakes, waffles, oatmeal, or toast.
- Jazz up salads with color and flavor by adding chopped apples, raisins, or mandarin oranges.
- Make sure there are fruit or vegetable options at every meal.
- Be a good role model! Show your kids how much you enjoy fruits and vegetables!

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Consolidating Policy Recommendations

- IOM Report
- AAP Policy Statements
- NGA Report
- CDC Report
- White House Task Force Report
- RWJF Report
## Prevention of Pediatric Obesity Policy Tool (POPOT)

### Dynamic internet tool that delineates the various policy recommendations and opportunities into a matrix of 30 cells

- After clicking on a cell one can see
  - Policy opportunities & possible action steps at various levels (community, school, etc)
  - Organizations recommending the policy strategies (IOM, CDC, etc)
  - Provides links to additional resources
  - Links to relevant data sources

### Table:

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<th>Community</th>
<th>Schools</th>
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[www.aap.org/obesity](http://www.aap.org/obesity)
Modeling at Work

• Workspace
  – Books, posters, videos promoting healthy lifestyle

• Support breastfeeding

• Staff role models
  – Drinking water, healthy snacks, physical activity

• Consistent messages, involvement with community, schools and advocacy
Be Our Voice

Be Our Voice

www.nichq.org/advocacy
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Texas Center for the Prevention and Treatment of Childhood Obesity

Empowering Families to Live Healthy Happy Lives

C L ● E ● A ● R
Clinical ● Education ● Advocacy ● Research

www.dellchildrens.net/healthyliving
Texas Center for the Prevention and Treatment of Childhood Obesity

- Clinical
- Education
- Advocacy
- Research

[Diagram with icons for Clinical, Education, Advocacy, Research]
Acknowledgements

- Kim Edwards, MD
  - Texas Pediatric Society Obesity Toolkit
- Jane Gray, PhD
- Healthy Living, Happy Living Team
- Chris Bolling, MD, MPH
- Steve Kelder, MPH, PhD
Texas Center for the Prevention and Treatment of Childhood Obesity

Empowering Families to Live Healthy Happy Lives

C L • E • A • R

Clinical • Education • Advocacy • Research

www.dellchildrens.net/healthyliving