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# Reducing Childhood Obesity Through Policy Change: Acting Now To Prevent Obesity

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**ABSTRACT** Childhood obesity is epidemic in the United States, and is expected to increase the rates of many chronic diseases. Increasing physical activity and improving nutrition are keys to obesity prevention and control. But changing individual behavior is difficult. A comprehensive, coordinated strategy is needed. Policy interventions that make healthy dietary and activity choices easier are likely to achieve the greatest benefits. There is emerging evidence on how to address childhood obesity, but we must take action now to begin to reverse the epidemic.

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## Impact Of Childhood Obesity

Childhood obesity is epidemic in the United States. More than one in six U.S. children is obese—three times the rate in the 1970s.<sup>1</sup> Obesity is a major contributor to cardiovascular disease, diabetes, and several types of cancer.<sup>2</sup> About 70 percent of obese youth have at least one additional risk factor for cardiovascular disease (for example, hypertension or high cholesterol), and nearly 40 percent have at least two additional risk factors.<sup>3</sup> Increases in obesity over the past few decades are reflected in higher rates of type 2 diabetes.<sup>4</sup> Youth now account for almost half of new cases of type 2 diabetes in some communities.<sup>5</sup>

Children who are obese after age six have a greater than 50 percent chance of being obese as adults, regardless of parental obesity status; 80 percent of children who were overweight at ages 10–15 were obese at age 25.<sup>6</sup> Obesity in children under age eight that persists into adulthood is also associated with more severe adult obesity.<sup>7</sup>

## A Framework For Action

Addressing socioeconomic factors, such as poverty and education, has the largest potential impact on population health.<sup>8</sup> Interventions to alter

existing socioeconomic conditions often require broad societal change. However, engagement of sectors beyond public health—most notably, education, transportation, and agriculture—will be important to long-term success.

Changes to the social and physical environments that make people's default choices healthy ones have the next-greatest potential impact. Public health officials can implement many of these interventions, alone or in coordination with other governmental and nongovernmental partners. By contrast, clinical interventions against obesity will have limited population impact, and education and counseling will have the smallest potential impact.

## Food Policies To Reduce Obesity

Changing our food environment can improve nutrition and reduce obesity through a three-prong strategy: altering relative food prices, shifting our exposure to food, and improving the image of healthy food while making unhealthy food less attractive.

In addition to insufficient exercise, obesity results from eating too much as well as eating the wrong things. Consuming food and beverages high in energy density but low in overall nutritional value, such as food high in sugar and fat, is

associated with weight gain and obesity.<sup>9</sup>

Sugar-sweetened beverages—a prime contributor to weight gain and obesity—constitute nearly 11 percent of children’s total calorie consumption.<sup>10</sup> Each additional daily serving of sugared soda increases a child’s risk of obesity by 60 percent.<sup>11</sup> Frequent soda consumption is most common in demographic groups at high risk of developing obesity.<sup>12</sup> Drinking water instead of sugar-sweetened beverages would reduce caloric intake among youth.<sup>13</sup> A New York City initiative is attempting to curtail sugared soda consumption by encouraging people to make water their default beverage choice.<sup>14</sup>

**PRICES AND TAXES** Over the past quarter-century, healthy food has become relatively more expensive and junk food relatively cheaper.<sup>15</sup> Increasing costs of unhealthy food and decreasing costs of healthy food, especially fruit and vegetables, would improve the balance of consumption.

**TAX POLICIES:** In the case of tobacco, increasing prices through higher taxes has been proven to reduce consumption.<sup>16</sup> Taxing unhealthy food would be likely to have a similar effect.<sup>15</sup>

Tax policies to decrease consumption of unhealthy products, such as alcohol and tobacco, are common and are generally better accepted than other taxes. If proceeds from taxes were used to support obesity prevention (for example, physical education in schools or farm-to-market incentives to increase fruit and vegetable consumption), public support for taxation would increase further.<sup>15,17</sup>

A tax of 1 cent an ounce on sugar-sweetened beverages—about a 10 percent price increase on a twelve-ounce can—would be likely to be the single most effective measure to reverse the obesity epidemic. Such a tax would reduce average per capita consumption by 8,000 calories annually, potentially preventing about 2.3 pounds per year of weight gain.<sup>15</sup> Similarly, subsidies that indirectly promote consumption of unhealthy food, such as sales tax exemptions for soda and snack food common in many states, should be eliminated to increase prices and reduce consumption.

**PRICING:** The other side of the price equation involves decreasing costs of healthier food, such as fruit and vegetables, whole grains, fish, and lean meat. Because agricultural policies influence what farmers grow, increasing agricultural subsidies can provide incentives to local farmers to grow fruit and vegetables.<sup>18</sup> The European Union recently established policies to improve market competitiveness and promote consumption of fruit and vegetables.<sup>19</sup>

School, child care, and government procurement and contracting policies can favor healthy food. Policies that set standards that promote healthy choices can lead to product reformulation, as occurred when trans fatty acids were removed from food,<sup>20</sup> and can give farmers incentives to fulfill increased demand.<sup>21</sup> Bonus vouchers that provide increased value for purchases of fruit and vegetables under the Supplemental Nutrition Assistance Program (formerly the Food Stamp Program) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) would also increase demand by allowing people to receive more of these foods from benefit entitlements.

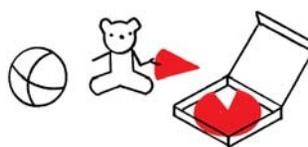
**EXPOSURE** The second strategy component involves increasing exposure and access to healthy food and reducing exposure and access to unhealthy items. Ensuring that supplies of fresh drinking water are freely available in all places, such as through water fountains, will encourage consumption. Public information campaigns also can increase the appeal of drinking water over other beverages.<sup>14</sup>

**FRESH FOOD:** Local governments and supermarket chains can partner to expand full-service groceries in underserved neighborhoods, as occurred in Philadelphia.<sup>22</sup> Stores can increase produce sales with attractive, well-kept displays and placement of produce at checkout aisles.

Governments can expand and subsidize farmers’ market and so-called green cart programs that bring fresh produce into underserved neighborhoods.<sup>23</sup> Vending machine companies could be required to replace unhealthy items with healthier choices (such as fresh fruit).

Removing unhealthy food from all schools, child care and health care facilities, and government institutions would reduce exposure and access.<sup>24</sup> In the past few years, availability of healthier food has increased in schools while availability of less healthy food has decreased.<sup>25</sup> More effort is needed to ensure that all food and beverages, including those available outside school meal programs, meet nutrition standards.

**ZONING:** Zoning restrictions can limit the density of fast-food establishments or can establish buffer zones between schools and recreation areas and businesses such as fast-food restaurants, convenience stores, and mobile food vendors. Evidence that greater density of neighborhood fast-food outlets is associated with increased obesity suggests that zoning regulations are worthy of further study.<sup>26</sup> Nonetheless, restrictions on fast-food establishments alone are likely to be insufficient because of the avail-



# Policies can change the context to make physical activity easier, safer, and more attractive.

ability of less healthy food elsewhere.<sup>27</sup>

**IMAGE** The third strategy component involves policies that improve the image of healthy food and make unhealthy food less attractive. One method is to restrict food advertising targeted at children. The American Academy of Pediatrics has said, “Advertising directed toward children is inherently deceptive.”<sup>25</sup> Nonetheless, children continue to be exposed to extensive marketing and promotion of food items.<sup>28</sup> Young children don’t understand the concept of advertising and are unable to distinguish ads from regular programming or news.<sup>29</sup>

**VOLUNTARY AD RESTRICTIONS:** Although some companies will abide by voluntary restrictions, industry self-regulation of tobacco advertising has not been effective.<sup>30</sup> Five years ago, the Institute of Medicine (IOM) recommended that the food industry develop and adhere to marketing guidelines that minimize the risk of childhood obesity.<sup>31</sup> It also recommended that if voluntary restrictions do not reduce food advertising targeted at children, the industry should be subject to regulation.<sup>31</sup> There has been limited progress since that time.

Completely eliminating exposure to food advertising on television could reduce obesity prevalence among U.S. children ages 6–12 by an estimated 15 percent.<sup>32</sup> Although a complete ban may not be feasible in the United States, the Federal Trade Commission (FTC) in late 2009 proposed voluntary standards prohibiting marketing food to children that does not meet specified nutritional guidelines.<sup>33</sup>

**BANNING ADS:** Several countries ban advertising of unhealthy food to children, including the United Kingdom,<sup>34</sup> Norway, and Sweden (the latter two having banned all advertising directed at children under age twelve).<sup>35</sup> Australia is adopting voluntary self-regulation, including a phase-out of marketing of unhealthy food until later at night, and will determine if formal regulation is warranted.<sup>36</sup>

In the 1970s, the FTC proposed sweeping

regulations to restrict television advertising to children.<sup>37</sup> These proposals were ultimately abandoned; tens of thousands of pages of expert testimony were archived for those who might want to revisit the issue in the future.<sup>38,39</sup>

**EATING OUT:** Since the 1960s, the share of expenditure on food eaten outside the home has nearly doubled.<sup>40</sup> Caloric and nutritional content of restaurant and fast food is generally not available at the point of purchase, unlike “Nutrition Facts” labeling on food purchased in stores. The absence of such information makes it difficult for people to know exactly what they are eating.

Providing the information directly on menus or menu boards allows people to more easily choose lower-calorie options. Around a third of people who have this information report that it affects their purchase and leads them to consume fewer calories.<sup>41</sup> In New York City, which implemented restaurant calorie labeling requirements in 2008, about one in six fast-food restaurant customers use posted calorie information.<sup>42</sup> Preferences of informed consumers can also drive changes to reduce portion size or change product formulation to reduce calories, salt, and fat.

**COUNTERADVERTISING:** Counteradvertising that shows the true impact of nutritionally harmful food and beverages can also change the image of unhealthy food. Hard-hitting anti-tobacco ads that graphically show the human impact of tobacco-related disease are most effective in reducing tobacco use,<sup>43</sup> whereas “positive” ads have limited or no impact. Advertising that is likely to be effective, exemplified by the recent anti-soda campaign in New York City,<sup>44</sup> focuses on harm caused by products and does not stigmatize individuals.

## Increasing Physical Activity

Policies can also change the context to make physical activity easier, safer, and more attractive. All youth ages 6–19 should get sixty minutes of moderate-to-vigorous activity daily.<sup>45</sup> However, about two-thirds do not meet this recommendation, and a quarter of adolescents do not achieve this level on any day.<sup>46</sup> Self-reported physical activity levels among adults have declined over the past several decades.<sup>47</sup> People tend to overestimate time and intensity of activity. About 40 percent of adults claim to engage in physical activity sufficient to improve health, but less than 4 percent actually do.<sup>48</sup>

Physical activity levels decrease by more than a third between ages nine and fifteen.<sup>49</sup> Active transportation to school (such as walking or bicycling)<sup>50</sup> and formal physical education instruction<sup>51</sup> have decreased, and sedentary behavior

has increased.<sup>52</sup>

**INCREASING ACTIVE TRANSPORTATION AND RECREATION** At least some decline in active transport to school reflects community design (for example, lack of sidewalks and bike paths or heavily traveled arterial roadways). Children's activity levels also depend on perceptions that neighborhoods and parks are safe places to walk, bike, and play.

Community and street design that incorporates parks, wide sidewalks and bike lanes, traffic calming measures (for example, speed bumps or cul-de-sacs), easy access to public transportation, and improved lighting and landscaping will make physical activity safer and more pleasant. However, modifications to the built environment are unlikely to increase activity levels without complementary strategies that address determinants of physical activity behavior.<sup>53</sup> Sustainable funding and lack of political will appear to be the greatest barriers to change.<sup>54</sup>

**REDUCING SEDENTARY BEHAVIOR** Reducing sedentary behavior (such as television watching and video game playing) is also important to curtailing obesity. Children's weight increases with daily TV viewing time,<sup>55</sup> and TV viewing in childhood and adolescence is linked to overweight in adulthood.<sup>56</sup> This weight increase appears related primarily to increased consumption of unhealthy food and exposure to food ads while watching.<sup>57</sup>

The average high school graduate will have spent about 15,000–18,000 hours watching TV but only 12,000 hours in school.<sup>58</sup> Almost half of children ages 8–16 watch at least three hours of television per day.<sup>59</sup> Two-thirds of teens<sup>60</sup> and 30 percent of children under age three<sup>61</sup> have televisions in their rooms. Video game playing is also associated with obesity in children.<sup>62</sup> Ultimately, parents must take the lead in reducing children's TV watching and providing alternative forms of family activity and recreation—and as with diet, children follow their parents' lead.<sup>31</sup>

**IMPROVING PHYSICAL ACTIVITY PROGRAMS** Active children are more likely to remain physically active into adolescence and adulthood. Schools are a natural location for physical activity before, during, and after school hours. Unfortunately, students today spend less time in structured physical education programs that provide opportunities for moderate-to-vigorous physical activity than in the past.<sup>45</sup> This is due in part to budget constraints and pressures to focus resources on improving academic skills<sup>63</sup> as well to as a lack of structured physical education classes that incorporate moderate-to-vigorous activity for most of the class period.<sup>64,65</sup>

## Many local programs have shown results, but rigorous evaluation is needed to help develop a stronger evidence base.

### Moving Forward On Reducing Childhood Obesity

There is emerging evidence on how to address childhood obesity.<sup>66</sup> As with tobacco control, obesity prevention will require major policy and contextual changes. Comprehensive approaches involving multiple strategies and sectors and all relevant stakeholder groups will likely be needed to reverse the epidemic.

Government at national, state, and local levels, spearheaded by public health agencies, must take action. The health care system, schools, and community organizations also have critical roles. Businesses need to improve the quality of workplace food options and encourage parents to model healthy behavior at home. The food industry will need to be engaged in developing creative solutions, with the understanding that continued aggressive promotion of many types of food may conflict with the goal of reducing obesity. Parents will be key to implementing change within households.

The city of Somerville, Massachusetts, provides a promising example of the potential of cross-sectoral collaborations. With the mayor's leadership, Somerville combined a series of school-based interventions with a healthy food labeling program in restaurants, engagement of medical providers, and community infrastructure improvements to support physical activity. These initiatives slowed the rate of increase in the number of overweight and obese children among elementary school students compared with two similar communities.<sup>67</sup>

Although many local programs have shown results, rigorous evaluation is needed to help develop a stronger evidence base. About a half billion dollars in American Recovery and Reinvestment Act funding will be awarded in 2010 in Communities Putting Prevention to Work grants

for state and local prevention and wellness initiatives.<sup>68</sup> Programs demonstrated to be successful can show the potential of nationwide action.

We need to continue to build the science base while we implement what we know now. Many proven community-level interventions have been developed based on the best available evidence and expert opinion.<sup>66</sup> We need political

will to implement change. Some proposals will generate opposition; recent examples include criticism of taxes on soft drinks<sup>69</sup> and litigation to block New York City's calorie labeling law.<sup>70</sup> Change will not be easy. But if we do not act now, the epidemic of childhood obesity will become increasingly difficult to address. ■

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## ABOUT THE AUTHOR: THOMAS R. FRIEDEN



### Thomas R. Frieden

As head of the Centers for Disease Control and Prevention (CDC), Thomas R. Frieden is one of the nation's top public health specialists, who arguably has responsibility for much of the health of a caseload of 300 million. At the top of his agenda, says Frieden, 49, is combating obesity in children and adults. "What has changed, in just the course of a generation, is that childhood obesity has become an epidemic," he says. "In the 1960s, 5 percent of children were overweight. Today, nearly 20 percent are. If you go with the flow in the U.S. today, the likelihood is that you will become overweight or obese, as are two-thirds of adults."

President Barack Obama tapped Frieden—a physician with training in internal medicine, infectious

diseases, public health, and epidemiology—for the CDC job in 2009. Frieden had served for more than seven years as commissioner of the New York City Health Department. With the strong support of Mayor Michael Bloomberg, Frieden had rolled out such initiatives as the Smoke-Free Air Act, which makes all workplaces smoke-free; a ban on the use of trans fats in food served in restaurants; an official NYC condom; and the introduction of the nation's largest community-based electronic health record project. In so doing, he courted controversy among advocates for tobacco companies and some restaurant owners. But he also helped position New York City once more at the very forefront of public health—even to the point of keeping a large bowl stocked with condoms in his office reception area to help encourage safer sex.

Some of the tactics New York City adopted in the obesity battle hold promise for wider application, Frieden says. "For example, in New York City, we mandated that chain restaurants list calories on menus and menu boards," he explains. "This had a

significant impact on reduced consumption in some of the chains." He also speaks approvingly of the move by his successor, New York City Health Commissioner Thomas Farley, to run tough commercials warning against consumption of sugary soft drinks. "We know from anti-tobacco marketing that hard-hitting ads that graphically show the human toll of tobacco-related disease reduce tobacco use," he says. "I go back to what I said: Ads using this approach to combat obesity are something new, but they may have a similar effect in helping change social norms and encouraging people to think about the potential harm these products cause. It's notable that the ad is careful not to criticize or stigmatize individuals, and this is important."

Now Frieden faces the challenge of moving from implementation of local prevention efforts to helping forge a broad national strategy against obesity—and arguably against even more formidable opposition than he encountered in New York. "The CDC has an important role to play in that effort," he says, pointing out that the 2009

American Recovery and Reinvestment Act channeled \$1 billion in stimulus funds into federal prevention and wellness programs, as well as grants for states, territories, and communities to promote healthier environments and policies. Health care reform legislation, if enacted, could also provide a boost to these efforts.

Going forward, a "comprehensive approach [to obesity] is likely to be most effective," Frieden says, as was the case with tobacco—where everything from smoking bans to higher tobacco taxes proved to be part of the solution. Of these, increasing the price of cigarettes through higher tobacco taxes was the "single most effective intervention," he says. In the absence of certain means to reverse the obesity epidemic, "we need to implement promising programs and rigorously evaluate them," Frieden adds. The CDC's role is "to identify promising practices, support local and state efforts to implement and evaluate them, and work for national-level policy changes."

Although Frieden is a New York native, his move to

CDC headquarters in Atlanta is also a bit of a homecoming, since he previously worked at the agency from 1990 to 2002. He has expertise in tuberculosis control, and he spent five years in India helping the government establish a TB control program there.

Occasionally accused of using Big-Brother tactics to get people to live healthier lives, Frieden does not overlook the role of personal responsibility. "Really, the goal is to do things you enjoy and will stick to. So whether it's physical activities that you find fun, or eating fruits and vegetables you enjoy, the key is to have patterns that are rewarding and help you stay healthy." And while some critics have called him a fun-hating zealot, he responds that "having a stroke or heart attack that disables you and dying young are not many people's idea of fun." He and public health colleagues are simply working "for a society in which the default choice is the healthier choice," he says—and in which people will actively have to "opt in" to having unhealthy lifestyles, rather than the other way around.