Restricting Trans Fat Use in Foods: the New York City Experience

Sonia Angell, MD MPH
Senior Advisor for Global Noncommunicable Diseases

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Division of Global Health Protection, Office of the Director

Presenter Disclosure

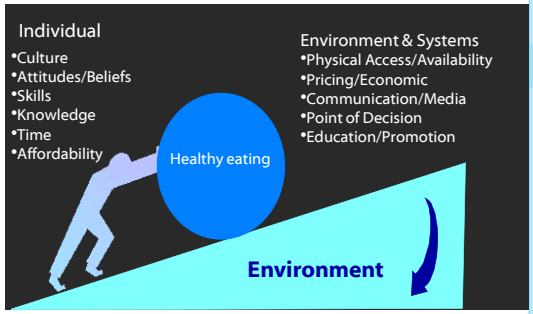
Sonia Y Angell, MD MPH

FINANCIAL DISCLOSURE:
No relevant financial relationships exist

Outline

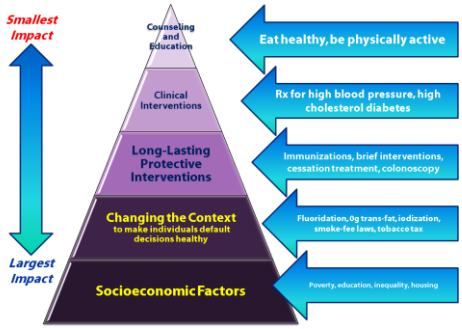
- Making healthier choices easier choices
  - Spectrum of opportunities
- Examples of NYC systems level approaches to improve population nutrition with a focus on trans fat
  - NYC restaurants
  - Food Procurement
  - Expanding the reach – example of sodium
- Use of US Dietary Guidelines in their development
- Conclusions

Public Health: Make Healthy Choices Easier Choices



Source: Adapted from presentation by Dr. Heidi Blanch, CDC, NCCHPDP, DNPAO

Level of Intervention



Source: Frieden TR. Am J Public Health 2010;100(4):590-595.

Spectrum of Opportunities

- Individuals change in ingredients selected for home prepared foods
- Individual change in foods ordered in restaurants
- Labeling (packaged and restaurant foods)
- Marketing
- Pricing
- Media/awareness campaigns
- Feeding programs
- Procurement policies
  - All of government
    - Vulnerable/select populations
  - Private sector institutions
- Industry-wide reformulation in restaurant and packaged

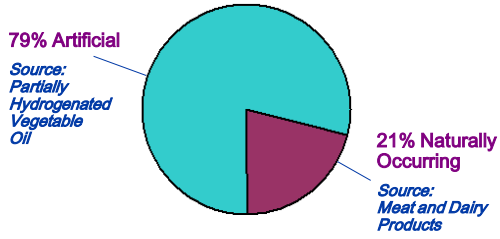
Trans Fat Intake Increases LDL-C

There is "a positive linear trend between trans fatty acid intake and total and LDL-C concentration, and therefore increased risk of coronary heart disease…"

– Institute of Medicine

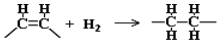
Trans Fat in the Diet

Average daily intake 2.6% of total calories (approx 5.8 grams)



Source: FDA Consumer magazine. September-October 2003 Issue. Pub No. FDA04-1329C

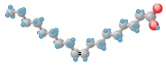
Background: What is Artificial Trans Fat?



Hydrogenation Process

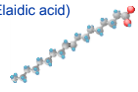
Vegetable Oil	+	Hydrogen	=	Partially Hydrogenated Vegetable Oil (PHVO)

Cis-9-octadecenoic acid (Oleic acid)

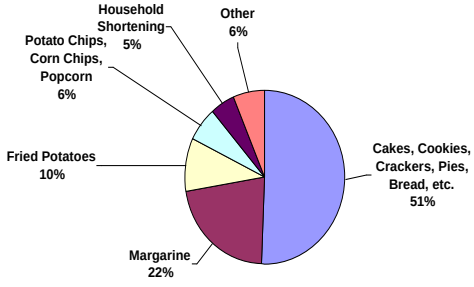


VS.

Trans-9-octadecenoic acid (Elaidic acid)



Major Food Sources of Trans Fat



Data Source: http://www.fda.gov/fdac/features/2003/503_fats.html

US Dietary Guidelines 2005 Key Recommendations

- Adequate Nutrients within Caloric Needs
  - "Consume a variety of nutrient dense foods and beverages within and among the basic food groups while choosing foods that limit the intake of saturated and ***trans fats,*** cholesterol, added sugars, salt, and alcohol."(page 6)
- Fats
  - "Consume less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and ***keep trans fatty acid*** consumption as low as possible." (page 30)
  - Also, advised that "by looking at the food label, consumers can select products that are lowest in saturated fat, *trans* fats, and cholesterol."

Reference: http://www.health.gov/dietaryguidelines/2010.asp

Prior to January 2006

Ingredients:
Liquid Corn Oil, **Partially Hydrogenated Soybean Oil**, Salt, Vegetable Mono And Diglycerides And Soy Lecithin (Emulsifiers), Sodium Benzoate (To Preserve Freshness), Vitamin A Palmitate, Colored With Beta Carotene (Source Of Vitamin A), Artificial Flavor, Vitamin D3

Nutrition Facts
Serving Size 1 cup (228g)
Servings Per Container 2

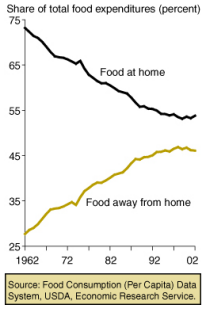
Amount Per Serving	
Calories 260	Calories from Fat 120
	% Daily Value*
Total Fat 13g	**20%**
Saturated Fat 5g	**25%**
Trans Fat 2g	
Cholesterol 30mg	**10%**
Sodium 660mg	**28%**
Total Carbohydrate 31g	**10%**
Dietary Fiber 0g	**0%**
Sugars 5g	
Protein 5g	
Vitamin A 4% • Vitamin C 2%	
Calcium 15% • Iron 4%	

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Lese than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

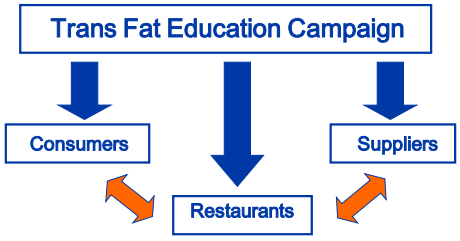
People Are Eating Out More



Rationale for Programming and Approach

- Cardiovascular disease the leading cause of death in the NYC
- Trans fat in the diet increases the risk for coronary heart disease
- Key public health and scientific authorities recommend reducing trans fat intake
- On packaged foods, federal Nutrition Facts Panel labeling requirements going into effect
- In restaurants, no practical way for consumers to avoid
- NYC DOHMH Recommended Policy: NYC restaurants should voluntarily eliminate the use of trans fat in foods

Restaurant Change through A Market-Based Voluntary Strategy



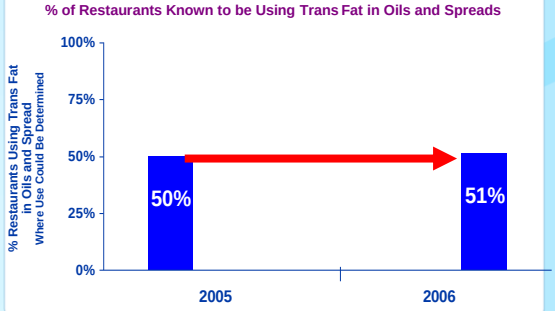
NYC Trans Fat Education Campaign 2005-2006

Survey:
- Prevalence of use pre- and post-intervention

Educational Materials to:
- 200,000 to consumers
- 30,000 to restaurants and other food service establishments (FSEs)
- 15,000 to suppliers

Also…
- Trans fat module in food protection courses
- Printed information on inspection reports
- Press launch

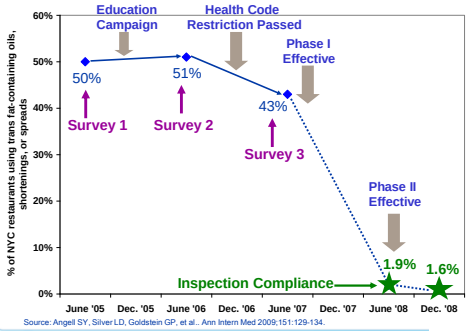
Evaluation: Trans Fat Use Did Not Decline Despite Education Campaign



Health Code Amendment to Restrict Artificial Trans Fat

- Phased in over 18 months
  - July 1, 2007: frying and spreads
  - July 1, 2008: all other foods
- Food served in manufacturers' original sealed, packaging are exempt
- Applies to all NYC restaurants and mobile vending commissaries
- Passed by Board of Health December 2006
- Soon after, New York City Council Restricts the Use of Trans Fat In Restaurants

Maintenance: Impact and Monitoring



Source: Angell SY, Silver LD, Goldstein GP, et al.. Ann Intern Med 2009;151:129-134.

Evaluation: Change in Saturated &Trans Fat in French Fries in Major Fast Food Chains

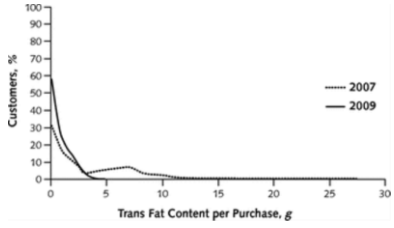
Table 2. Trans and Saturated Fat Content of French Fries Sold in Major U.S. Fast Food Chains*

French Fries	Fatty Acid Content†								
	Before Effective Date			After Effective Date			Change		
	Saturated Fat, g	Trans Fat, g	Saturated + Trans Fat, g	Saturated Fat, g	Trans Fat, g	Saturated + Trans Fat, g	Saturated Fat, g	Trans Fat, g	Saturated + Trans Fat, g
Wendy's									
Kid's Meal (small)	1.5	0.0	1.5	1.5	0.0	1.5	0.0	0.0	0.0
Medium (small)	2.5	1.0	3.5	2.5	0.0	2.5	0.0	−1.0	−1.0
Biggie (medium)	3.0	1.0	4.0	3.0	0.0	3.0	0.0	−1.0	−1.0
Great Biggie (large)	4.0	1.0	5.0	4.0	0.0	4.0	0.0	−1.0	−1.0
McDonald's									
Small	2.5	3.5	6.0	1.5	0.0	1.5	−1.0	−3.5	−4.5
Medium	4.0	5.0	9.0	2.5	0.0	2.5	−1.5	−5.0	−6.5
Large	6.0	8.0	14.0	3.5	0.0	3.5	−2.5	−8.0	−10.5
Arby's									
Small	4.0	3.0	7.0	4.0	0.0	4.0	0.0	−3.0	−3.0
Medium	4.0	4.0	8.0	4.0	0.0	4.0	0.0	−4.0	−4.0
Large	7.0	6.0	13.0	7.0	1.0	8.0	0.0	−4.0	−4.0
White Castle									
Regular, 4.12 oz	3.0	5.0	8.0	3.0	0.0	3.0	0.0	−5.0	−5.0
Sack, 8.6 oz	6.0	11.0	17.0	6.0	0.0	6.0	0.0	−11.0	−11.0
Mean grams	4.0	4.0	7.9	3.5	0.1	3.6	−0.4	−3.9	−4.3
Mean gram change, %							−10.5	−97.9	−54.2

* Analysis restricted to French fries to illustrate the effect of the first phase of the trans fat regulation, which covered fry oils and spreads. The second phase covered all other products and went into effect on 1 July 2008.
† Values are based on nutrition information published online at each chain's Web site. Access dates: Wendy's, 1 December 2006 (before) and 1 April 2008 (after); McDonald's, 25 January 2007 (before) and 22 May 2008 (after); Arby's, 6 February 2007 (before) and 23 May 2008 (after); and White Castle, 20 February 2007 (before) and 25 August 2008 (after).

Source: Angell SY, Silver LD, Goldstein GP, et al. Ann Intern Med 2009;151:129-134.

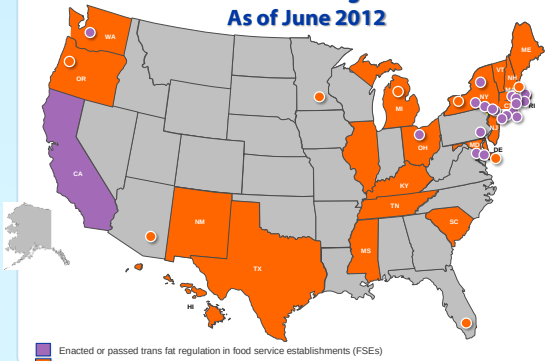
Change in Trans Fatty Acid Content of Fast-Food Meal Purchases in NYC, 2007 to 2009



- Mean trans fat decreased by 2.5 g, saturated fat increased by 0.55 g, = reduction in trans fat plus saturated fat 1.9 g per purchase
- No difference by store location neighborhood income

Angell SY Ann Intern Med. 2012;157(2):81-86. doi:10.7326/0003-4819-157-2-201207170-00004

State Trans Fat Regulations As of June 2012



Enacted or passed trans fat regulation in food service establishments (FSEs)
Trans fat regulation in FSEs introduced, defeated, or stalled

Slide Source: NYC DOHMH, 11-2013

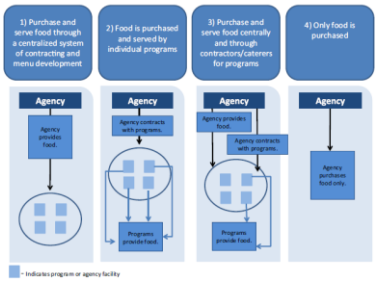
http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm373939.htm

Whole of Government
Changing City Food Purchasing to Improve Diet

Aligning City Government Action: Purchasing and Nutrition

- **Context**
  - NYC serves 260+ million meals and snacks annually
  - 12 city agencies
  - Sites include: schools, after-school programs, senior centers, homeless shelters, child care centers, correctional facilities, public hospitals and parks, emergency food centers, mental health programs
- **Strategy**
  - Create and implement nutrition standards for all foods purchased and served by NYC Agencies
  - Mayoral position: Food Policy Coordinator
  - Development included review of nutrition literature, discussions about product availability, and iterative process of agency feedback

Criteria Setting Requires Consideration of Four Types of Agency Food Procurement Processes



Lederer et al / Am J Prev Med 2014;46(4):423–428

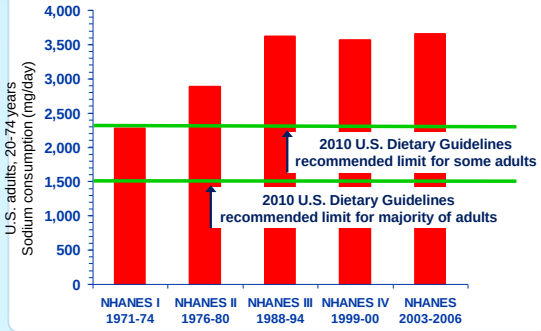
Nutrition Standards for all NYC Agencies

- Three Sections of Standards
  - Purchased food
  - Meals and snacks served
  - Agency and population-specific standards and exceptions
- Requirements
  - Sodium, fat, saturated fat, fiber and calorie limits for daily/meal intake
  - Sodium limits by food category
  - No artificial trans fat
- Informed by leading health authority guidance
  - Dietary Guidelines for Americans
  - IOM
  - Food and Drug Administration
  - relevant published research

www.nyc.gov/html/doh/downloads/pdf/cardio/cardio-meals-snacks-standards.pdf

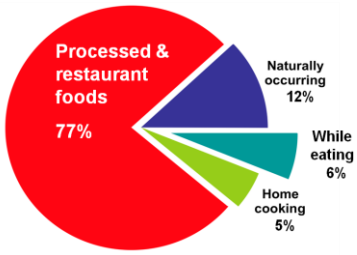
NYC Coordinated National Salt Reduction Initiative

Reducing Salt Intake Will Save Lives



Briefel RR, Johnson CL. Secular trends in dietary intake in the United States. *Annual Review of Nutrition*. Vol. 24, 401-431. July 2004.

Most Salt Comes from Processed and Restaurant Foods

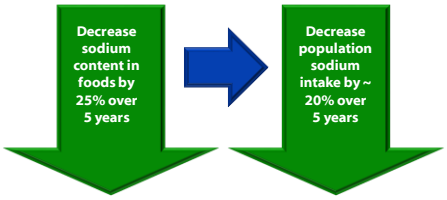


Source: Mattes, RD. Journal of American College Nutrition, 1991, 10:383-393

Population Approach: Consider Sodium in Foods As Purchased

- NYC-coordinated model based upon UK success
  - Government-industry collaboration
- UK approach establishes voluntary industry sodium content targets in foods that are
  - Substantive
  - Achievable
  - Gradual
  - Voluntary
  - Measurable

NSRI Goal: 20% Reduction in Sodium Intake in 5 Years



Information on NSRI available at www.nyc.gov/html/doh/html/diseases/salt.shtml

NATIONAL SALT REDUCTION INITIATIVE PACKAGED FOOD CATEGORIES AND TARGETS

MAIN PACKAGED FOOD CATEGORY	PACKAGED FOOD CATEGORY	PACKAGED FOOD CATEGORY DESCRIPTION	BASELINE 2010 SALES-WEIGHTED MEAN	Targets apply to a company's sales-weighted mean sodium	
				2012 TARGET	2014 TARGET
1. Bakery Products	1.1 Breads and rolls	Savory yeast-leavened breads and rolls e.g., bagels, English muffins, croissants, flatbreads, pre-packaged sliced bread, soft bread sticks, and soft pretzels. Excludes dough and frozen or refrigerated bakery products.	485 mg/100g	440 mg/100g	340 mg/100g
	1.2 Sweet breads and rolls	Sweet yeast-leavened breads and rolls e.g., Danish, sweet rolls, and yeast-leavened doughnuts.	205 mg/100g	270 mg/100g	220 mg/100g
	1.3 Tortillas and wraps	Refrigerated and shelf stable tortillas and wraps, savory chemically-leavened breads e.g., biscuits, corn bread, and hush puppies. Excludes wonton skins and frozen bakery products.	717 mg/100g	650 mg/100g	540 mg/100g
	1.4 Cakes, snack cakes, muffins, and toaster pastries	Medium and light weight cake, snack cakes, muffins, toaster pastries, cake doughnuts, coffee cake, crumb cake, scones, brownies, and sweet quick-type breads. Excludes heavy weight cake e.g., cheesecake.	359 mg/100g	310 mg/100g	250 mg/100g
	1.5 Cookies	Filled and unfilled cookies, sandwich cookies, and tea biscuits. Excludes cookie dough and frozen or refrigerated cookies.	367 mg/100g	310 mg/100g	260 mg/100g
	1.6 Crackers	Filled and unfilled crackers and puffed cereal-grain cakes e.g., butter crackers, cheese crackers, sandwich crackers, soda crackers, cheese and cracker snack packs, graham crackers, and rice cakes. Excludes animal crackers (see 1.5), bagel chips, crisp breads, hard breadsticks, and matza-based.	918 mg/100g	780 mg/100g	640 mg/100g
	1.7 French toast, pancakes, and waffles	Frozen French toast, pancakes, and waffles e.g., French toast sticks, and plain and flavored pancakes and waffles. Excludes refrigerated and shelf stable French toast, pancakes, waffles, and dry batter mixes. Excludes mixed dishes containing French toast, pancakes, and waffles (see 10.3-10.3).	569 mg/100g	510 mg/100g	430 mg/100g
2. Cereal and Other Grain	2.1 Instant hot cereal	Flavored and unflavored instant oatmeal, farina wheat, and other hot cereal. Excludes instant grits	562 mg/100g	480 mg/100g	360 mg/100g

Source: http://www.nyc.gov/html/doh/downloads/pdf/cardio/packaged-food-targets.pdf

Observations

- Population interventions can make 'Healthy Choices *Easy* Choices"
- Because the global community is increasingly similar with respect to dietary patterns, lessons learned in any country could be important to every country.
  - A robust global learning community is essential
- *Scalable,* evidence-based models are essential
  - Evaluation is key
- Prior US Dietary Guidelines were important reference points in the development of the NYC programs described here, but the creation of population level interventions required use of additional resources to shape nutrition related criteria

Thank you!

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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