Enabling Healthy Behaviors through Policy and Environment Change

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New York City Department of Health and Mental Hygiene
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CTSI CEPHR Quarterly Lecture Series
Outline

• New York City in the context of the world
• Approach to risk modification
• A short story...
• New and emerging frontiers of focus
Source: Sonia’s iphone
We are more similar than not...
Environments are More Similar: Top 10 Retailers, 2011

• **North America**
  - Wal-Mart Store
  - Kroger Co
  - Costco Wholesale Corp
  - Safeway
  - Supervalue
  - Lobalaw Cos
  - Publix Supermarkets
  - Ahold USA
  - C & S Wholesale Grocers
  - Delhaize America

• **Worldwide**
  - Wal-Mart Stores
  - Carrefour
  - Metro Group
  - Tesco
  - Schwarz Group
  - Kroger Co.
  - Costco Wholesale Corp
  - Rewe Group
  - Aldi
  - Target Corp

Top 10 Food and Beverage Companies, 2010

• North America
  • Nestle
  • Tyson
  • Kraft
  • Pepsico Inc
  • Anheuser-Bush InBev
  • General Mills
  • JBS USA
  • Dean Foods
  • Mars Inc.
  • Smithfield Foods Inc.

• Worldwide
  • Nestle
  • Pepsico Inc.
  • Kraft
  • ABInBev
  • ADM
  • Coca-cola
  • Mars
  • Unilever
  • Tyson
  • Cargill

Leading Causes of Death Globally

- Communicable diseases*: 25%
- Cardiovascular: 30%
- Cancer: 15%
- Injuries: 10%
- Other chronic diseases: 11%
- Chronic respiratory diseases: 7%
- Diabetes: 2%

Global deaths, 2010

*Includes communicable diseases, maternal, neonatal, and nutritional disorders

Leading Causes of Death in New York City

- Heart Disease: 32%
- Cancer: 32%
- Influenza/Pneumonia: 4%
- Diabetes: 3%
- Chronic Lower Respiratory Diseases: 3%
- All Other Causes: 26%

Source: NYC DOHMH, Office of Vital Statistics, 2015; Data for 2012
Deaths Attributable to Leading Factors By Country Income Level, 2004

Mortality in thousands (total: 58.8 million)

Global Response: Chronic Disease Platform

<table>
<thead>
<tr>
<th>Common Risk Factors</th>
<th>Major Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>Cardiovascular Disease</td>
</tr>
<tr>
<td>Poor diet</td>
<td>Cancer</td>
</tr>
<tr>
<td>Harmful use of Alcohol</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>Chronic Lung Disease</td>
</tr>
</tbody>
</table>

Metabolic Risk Factors

- High Blood Pressure
- High Glucose
- High Cholesterol
Promoting Health: Make Healthy Choices Easier Choices

Individual
- Culture
- Attitudes/Beliefs
- Skills
- Knowledge
- Time
- Affordability

Environment & Systems
- Physical Access/Availability
- Pricing/Economic
- Communication/Media
- Point of Decision
- Education/Promotion

Health Promoting Behaviors

Source: Adapted from presentation by Dr. Heidi Blanch, CDC, NCCHPDP, DNPAO
Restricting Trans Fat Use in Foods: the New York City Experience
# The Dietary Disconnect

<table>
<thead>
<tr>
<th>Daily Recommendation (AHA)</th>
<th>US mean intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium: &lt; 2300 mg or &lt; 1500 mg*</td>
<td>3372 mg (Adults)</td>
</tr>
<tr>
<td>Saturated fat: &lt; 7% of energy</td>
<td>11.2%</td>
</tr>
<tr>
<td>Trans fat: &lt; 1% of energy</td>
<td>2.6%</td>
</tr>
<tr>
<td>Total fat: 25-35% of energy</td>
<td>33.6%</td>
</tr>
<tr>
<td>Cholesterol: &lt; 300 mg</td>
<td>333 mg (M) / 224 (F)</td>
</tr>
</tbody>
</table>

* For persons who are ≥51, African American, or have hypertension, diabetes, or chronic kidney disease.

Spectrum of Opportunities

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

\[ \text{Vegetable Oil} + \text{Hydrogen} \rightarrow \text{Partially Hydrogenated Vegetable Oil (PHVO)} \]

Cis-9-octadecenoic acid (Oleic acid) VS. Trans-9-octadecenoic acid (Elaidic acid)
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
Major Food Sources of Trans Fat

- Margarine: 22%
- Cakes, Cookies, Crackers, Pies, Bread, etc.: 51%
- Fried Potatoes: 10%
- Potato Chips, Corn Chips, Popcorn: 6%
- Household Shortening: 5%
- Other: 6%

Trans Fat in the Diet

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

79% Artificial
Source: Partially Hydrogenated Vegetable Oil

21% Naturally Occurring
Source: Meat and Dairy Products

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

Prior to January 2006
People Are Eating Out More

Share of total food expenditures (percent)

VEGETABLE OIL

INGREDIENTS: PARTIALLY HYDROGENATED SOYBEAN OIL, CORN OIL, TBHQ AND CITRIC ACID (ADDED TO HELP PRESERVE FRESHNESS), AND DIMETHYLPOLYSILOXANE (ADDED AS AN ANTIPOAMING AGENT).
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

Trans Fat Education Campaign

- Consumers
- Restaurants
- Suppliers
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

% of Restaurants Known to be Using Trans Fat in Oils and Spreads

- 2005: 50%
- 2006: 51%
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

% of NYC restaurants using trans fat-containing oils, shortenings, or spreads

- Education Campaign
- Health Code Restriction Passed
- Phase I Effective
- Phase II Effective
- Inspection Compliance

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

<table>
<thead>
<tr>
<th>French Fries</th>
<th>Fatty Acid Content†</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before Effective Date</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Saturated Fat, Trans Fat, Saturated + Trans Fat, g</td>
<td></td>
</tr>
<tr>
<td>Wendy's</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kid’s Meal (small)</td>
<td>1.5, 0.0, 1.5</td>
<td>0.0, 0.0, 0.0</td>
</tr>
<tr>
<td>Medium (small)</td>
<td>2.5, 1.0, 3.5</td>
<td>0.0, −1.0, −1.0</td>
</tr>
<tr>
<td>Biggie (medium)</td>
<td>3.0, 1.0, 4.0</td>
<td>0.0, −1.0, −1.0</td>
</tr>
<tr>
<td>Great Biggie (large)</td>
<td>4.0, 1.0, 5.0</td>
<td>0.0, −1.0, −1.0</td>
</tr>
<tr>
<td>McDonald’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>2.5, 3.5, 6.0</td>
<td>−1.0, −3.5, −4.5</td>
</tr>
<tr>
<td>Medium</td>
<td>4.0, 5.0, 9.0</td>
<td>−1.5, −5.0, −6.5</td>
</tr>
<tr>
<td>Large</td>
<td>6.0, 8.0, 14.0</td>
<td>−2.5, −8.0, −10.5</td>
</tr>
<tr>
<td>Arby’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>4.0, 3.0, 7.0</td>
<td>0.0, −3.0, −3.0</td>
</tr>
<tr>
<td>Medium</td>
<td>4.0, 4.0, 8.0</td>
<td>0.0, −4.0, −4.0</td>
</tr>
<tr>
<td>Large</td>
<td>7.0, 5.0, 13.0</td>
<td>0.0, −4.0, −4.0</td>
</tr>
<tr>
<td>White Castle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular, 4.12 oz</td>
<td>3.0, 5.0, 8.0</td>
<td>−0.0, −5.0, 2.0</td>
</tr>
<tr>
<td>Sack, 8.6 oz</td>
<td>6.0, 11.0, 17.0</td>
<td>0.0, −11.0, −11.0</td>
</tr>
<tr>
<td>Mean grams</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean gram change, %</td>
<td>4.0, 4.0, 7.9</td>
<td>−0.4, −3.9, −4.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.5, −97.9, −54.2</td>
</tr>
</tbody>
</table>

* 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, 23 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).

• 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

Enacted or passed trans fat regulation in food service establishments (FSEs)

Trans fat regulation in FSEs introduced, defeated, or stalled

State Trans Fat Regulations
As of June 2012

Slide Source: NYC DOHMH, 11-2013
FDA NEWS RELEASE

For Immediate Release: Nov. 7, 2013
Media Inquiries: Shelly Burgess, shelly.burgess@fda.hhs.gov, 301-796-4651
Consumer Inquiries: 1-888-INFO-FDA

FDA takes step to further reduce trans fats in processed foods
Reducing trans fat intake could prevent thousands of heart attacks and deaths

The U.S. Food and Drug Administration announced its preliminary determination that partially hydrogenated oils (PHOs), the primary dietary source of artificial trans fat in processed foods, are not “generally recognized as safe” for use in food. The FDA’s preliminary determination is based on available scientific evidence and the findings of expert scientific panels.

The agency has opened a 60-day comment period on this preliminary determination to collect additional data and to gain input on the time potentially needed for food manufacturers to reformulate products that currently contain artificial trans fat should this determination be finalized.

“While consumption of potentially harmful artificial trans fat has declined over the last two decades in the United States, current intake remains a significant public health concern,” said FDA Commissioner Margaret A. Hamburg, M.D. “The FDA’s action today is an important step toward protecting more Americans from the potential dangers of trans fat. Further reduction in the amount of trans fat in the American diet could prevent an additional 20,000 heart attacks and 7,000 deaths from heart disease each year – a critical step in the protection of Americans’ health.”

Consumption of trans fat raises low-density lipoprotein (LDL), or “bad” cholesterol, increasing the risk of coronary heart disease. The independent Institute of Medicine (IOM) has concluded that trans fat provides no known health benefit and that there is no safe level of consumption of artificial trans fat. Additionally, the IOM recommends that consumption of trans fat should be as low as possible while consuming a nutritionally adequate diet.

In recent years, many food manufacturers and retailers have voluntarily decreased trans fat levels in many foods and products they sell. Trans fat can be found in some processed foods, such as certain desserts, microwave popcorn products, frozen pizzas, margarines and coffee creamers. Numerous retailers and manufacturers have already demonstrated that many of these products can be made without trans fat.
Half of U.S. Adults have Non-Optimal Blood Pressure

- Normal (SBP <120 and DBP <80): 40%
- Prehypertension (SBP 120-139 or DBP 80-89): 30%
- Hypertension (SBP ≥140 or DBP ≥90): 19%
- Treated, controlled (taking medications and BP <140/90): 11%

Adult Smoking in New York City

Source: CDC Behavioral Risk Factor Surveillance Survey; NYC Community Health Survey
The Importance of Place

Diabetes Deaths (per 100,000)

AIDS Deaths (per 100,000)

Asthma Hospitalizations (per 100,000 Children)

Hospitalizations for Drug Use (per 100,000)

Infant Deaths (per 1,000 Live Births)
Enabling Health in High Risk Populations
Refresh, Retool, Refocus

• Attention to
  • Health equity
  • Place-based action, engage community experience
  • Reaching critical populations, eg justice involved
• Bridget the divide between public health and clinical care
  • Harnessing EHRs to serve the dual purpose of individual and population health
  • Improving quality through system reformation that includes population health (ACA, DSRIP, value based care focus, meaningful use)
District Public Health Offices

Target Neighborhoods for the District Public Health Offices (DPHO) of the New York City Department of Health and Mental Hygiene

**Bronx DPHO**
- Community Districts: 201 to 206
  - Neighboring zip codes: 10441, 10442, 10443, 10452, 10454, 10455, 10456, 10457, 10459, 10460, 10474

**East and Central Harlem DPHO**
- Community Districts: 110 and 111
  - Neighborhoods targeted: Central Harlem, East Harlem
  - Zip Codes: 10026, 10027, 10029, 10301, 10035, 10037, 10039

**Brooklyn DPHO**
- Community Districts: 303, 304, 305, 316
  - Neighborhoods targeted: Redford/Bushwick, 303
  - Zip Codes: 11206, 11208, 11209, 11211, 11213, 11216, 11221, 11223, 11237

*Only a small area of a specified zip code is within the target Community District, WNs included in the DPHO target area for outreach and programming, they are not generally included when calculating area-level rates of illnes.
Place and Justice-Involved Populations

Prison Admissions (2009)

New York City (2009)
People Admitted to Prison per 1000 Adults by Census Tract of Residence

Adm per 1000 Adults
- Over 6
- 3.51 - 6.00
- 2.01 - 3.50
- 1.01 - 2.00
- 0.00 - 1.00

Percent living in Poverty

Percent of population Living Below Federal Poverty Level by Zip Code
- <10% (low poverty areas)
- 10% to <20%
- 20% to <30%
- <30% (very high poverty areas)

Percent of total population which is Black and Latino

Percentage of Total Population which is Non-Hispanic Black or Hispanic by Zip Code
- 2% - 16%
- 17% - 42%
- 41% - 60%
- 61% - 97%

Data Source: Jencks Mapping Center (JMC), Rutgers University. Analysis of NYSDEC data. JMC is not responsible for NYS Health.
New York City Jail System
Impact on Community

- Incarceration disrupts the ecology of neighborhoods
- Loss of parents and children places burden on families
- Large number of people return with significant trauma to both physical and mental health
Place in Jails: Solitary Confinement and Self-Harm

![Graph showing the relationship between self-harm gestures and percent solitary beds in jails from 2007 to 2012.](image-url)
Harnessing the Power of EHRs for Change: Solitary Confinement and Risk of Self-Harm Among Jail Inmates

- Patients in solitary represent 53% of all self-harm acts and 47% of all high lethality self-harm acts.
- Controlling for other factors, patients in solitary were about 6.9 x as likely to commit acts of self-harm.
NYC To End Solitary Confinement For Inmates 21 And Under

AP

Posted: 01/13/2015 11:35 am EST  |  Updated: 01/13/2015 11:59 am EST

New York City Is Finally Ending Solitary Confinement for Young Adults

January 13, 2015

New York City officials are banning isolation for young adults in the city's prisons.

Wednesday 14 January 2015 at 11:31 AM ET

Rikers to Ban Isolation for Inmates 21 and Younger

By MICHAEL WINEGAR and MICHAEL SCHWARTZ  |  JAN 15 2015
Harnessing the Power of EHRs for Change in the Community: Primary Care Information Project

Mission

• Improve quality of care in medically underserved areas through health information technology
• Promote new models of care focusing on prevention and public health priorities

Success

• Over 17,000 providers joined PCIP and the Regional Extension Center (NYC REACH), including more than:
  • 1095 independent practices
  • 63 community health centers
  • 54 hospitals & outpatient clinics
Imagine a World Where Surveillance is Continuous: Macrooscope Surveillance System

- **NYC Macrooscope goal**: Create and validate a system using data from primary care EHRs for population health surveillance for chronic disease.

- **Approach**: Compare cleaned EHR-based estimates to gold standard examination survey (NYC HANES 2013) and telephone survey (Community Health Survey 2013), at population and individual levels.

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<table>
<thead>
<tr>
<th>Preliminary Comparisons</th>
<th>2012 NYC Macroscope</th>
<th>2012 CHS*</th>
<th>2004 NYC HANES*</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=640,860</td>
<td>N=7,004</td>
<td>N=1,261</td>
<td></td>
</tr>
<tr>
<td>Obesity**</td>
<td>29.5</td>
<td>25.4</td>
<td>28.2</td>
</tr>
<tr>
<td>Hypertension Diagnosis</td>
<td>30.7</td>
<td>30.9</td>
<td>30.9</td>
</tr>
<tr>
<td>Hypertension Treatment</td>
<td>76.4</td>
<td>70.4</td>
<td>70.2</td>
</tr>
</tbody>
</table>

*Subpopulation that has seen a doctor in the past year.

**CHS obesity self-reported, NYC Macroscope and NYC HANES have measured height and weight.
Trends in Life Expectancy in New York City, 2001-2010

Sources: NYC DOHMH Bureau of Vital Statistics; National Center for Health Statistics
Trends in Life Expectancy in New York City by Race/Ethnicity, 2001-2010

Source: NYC DOHMH Bureau of Vital Statistics
Trends in Life Expectancy in New York City by Neighborhood Poverty, 2001-2010

Neighborhoods were ranked based on the percent of residents living below 200% of the federal poverty level, according to the Census 2000, and categorized into three equal groups as low-, medium-, and high-poverty based on relative levels of poverty across the city.

Source: NYC DOHMH Bureau of Vital Statistics
Last Thoughts on NYCs Approach

- **Data:**
  - Invest, invest, invest

- **Approach:**
  - Traditional PH approaches work, but they are not always enough.
  - Health equity must be a lens for our work
  - We’re smarter together. COLLABORATE, ENGAGE

- **Pursue interventions that are**
  - Evidence-based or evidence-informed
  - Scalable models
  - Sustainable

- **Lessons learned in any country could be important to every country**

  *A robust global learning community is essential*
Thanks!

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New York City Department of Health and Mental Hygiene

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Suppose 19th Century Public Health Interventions Relied Upon Individual Action?

- “Responsible people boil water”
- “Know your butcher”
- “Get fresh air”
- “Avoid crowds”
- “Keep a tidy house”
- “Take care of your refuse”
Health Impact Pyramid