The Public Health Model and Prevention

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DISCLOSURE OF CONFLICTS OF INTEREST

Boris D. Lushniak, MD, MPH

- I do not have any relevant financial relationships with any commercial interests
- No off-label discussion of drugs or devices (except emergency IND use)
- Work supported by US Government (DHHS, USPHS, FDA, CDC/NIOSH)
# Seven Uniformed Services of the United States

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The Mission of the Commissioned Corps

Protecting, promoting, and advancing the health and safety of the nation
As America’s uniformed service of public health professionals, the Commissioned Corps achieves this mission through:

- Leadership and excellence in public health practice
- The advancement of public health science
- Rapid and effective response to public health needs
The Surgeon General’s Vision for a Healthy and Fit Nation

2010

U.S. Department of Health and Human Services
Major Actions of OSG

- A Report of the Surgeon General
  - How Tobacco Smoke Causes Disease
    - The Biology and Behavioral Basis for Smoking-Attributable Disease
      - December 9, 2010
Major Actions of OSG

- A Report of the Surgeon General
  - Preventing Tobacco Use Among Youth and Young Adults
    - March 8, 2012
Other Activities

• Other OSG initiatives – prescription drug misuse in teens, youth violence, Healthy apps challenge
• Let’s Move campaign
• Million Hearts campaign
  – Prevent 1 million heart attacks and strokes in 5 years
  – Aspirin, Blood Pressure, Cholesterol, Smoking
  – www.millionhearts.hhs.gov
Public Health Model

- Model -- A person or object serving as an example to be imitated or compared
Luther Terry

- 15 SEPT 1911 - 29 MAR 1985
- Born: Red Level, Alabama
- BS Birmingham-Southern (1931)
- MD Tulane (1934)
- Asst professor of preventive medicine and public health UT Galveston (1940-42)
- Public Health Service Hospital Baltimore (1942)
Luther Terry

- Chief of General Medicine and Experimental Therapeutics at the National Heart Institute (1950) – “golden era of cardiovascular clinical investigation”
- Assistant Director of NHI (1958)
- 9th Surgeon General (3/2/1961-10/1/1965)
- Quit smoking in 1963; Chaired SG’s Advisory Committee on Smoking and Health – report released (1/11/1964); at that time 43% Americans smoked
- FTC requires cigarette manufacturers “clearly and prominently” place a warning (1/1/1965)
- Cigarette Labeling and Advertising Act of 1965
Luther Terry

- Consultant to American Cancer Society
- Helped obtain ban on TV/radio advertising (1971) and worked on elimination of workplace smoking
- VP Medical Affairs and Professor Univ of Penn
- Buried in Arlington National Cemetery
C. Everett Koop

- Born: Brooklyn, NY
- BA Dartmouth (1937)
- MD Cornell (1941)
- ScD University of Pennsylvania (1947)
- Internationally renowned pediatric surgeon
C. Everett Koop

- 8 reports on tobacco
  - the first report on the health consequences of involuntary tobacco smoke exposure
  - nicotine as addictive as heroin
- 1988 unprecedented action in mailing "Understanding AIDS" to every U.S. household
- Revitalization of the Corps
- 1995 Presidential Medal of Freedom
Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity
Public Health

- The science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals.
  
  – CEA Winslow, 1920
Public Health

- Deals with preventive rather than curative aspects of health
- Deals with population-level, rather than individual-level health issues
Public Health Core Functions and 10 Essential Services
Core Public Health Functions

- Assessment and monitoring of the health of communities and populations at risk
  - identify health problems and priorities - surveillance

- The formulation of public policies
  - designed to solve identified local and national health problems and priorities

- Assure that all populations have access to appropriate and cost-effective care
  - including health promotion and disease prevention services
  - evaluation of the effectiveness of that care
Public Health Model

Model -- A schematic description of a system, theory, or phenomenon that accounts for its known or inferred properties and may be used for further study of its characteristics
Public Health Model

Problem

Surveillance:
What is the problem?

Risk Factor Identification:
What is the cause?

Intervention Evaluation:
What works?

Implementation:
How do you do it?

Response
Public Health Surveillance

- Ongoing, systematic collection, analysis, and interpretation of health-related data
- Essential to the planning, implementation, and evaluation of public health practice
- Closely integrated with the timely dissemination of these data to those responsible for prevention and control
Melanoma of the Skin
Incidence Rates US 1999-2007

National Program of Cancer Registries and SEER
Melanoma of the Skin 2013

- 76,690 estimated new cases (59% males)
  - 5\textsuperscript{th} most common cancer in males (5%)
  - 7\textsuperscript{th} most common in females (4%)

- 9,480 deaths
  - 66% males

CA Cancer J Clin 63:11-30 (Jan/Feb 2013)
Information Loop of Public Health Surveillance

- Public
- Health Care Providers
- Health Agencies
- Analysis
- Reporting

Summaries, Interpretations, Recommendations
Public Health Model

Problem

Surveillance: What is the problem?

Risk Factor Identification: What is the cause?

Intervention Evaluation: What works?

Implementation: How do you do it?

Response
Causal Pathway of Disease or Disability

- Environment (pre-exposure)
- Hazard/agent
- Behavior/risk factor
- Exposure
- Pre-symptomatic phase
- Apparent disease
- Death
Public Health Model

Problem

Surveillance: What is the problem?

Risk Factor Identification: What is the cause?

Intervention Evaluation: What works?

Implementation: How do you do it?
Core Public Health Functions

- Assessment and monitoring of the health of communities and populations at risk
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- Assure that all populations have access to appropriate and cost-effective care
  - including health promotion and disease prevention services
  - evaluation of the effectiveness of that care
Use policies, research agendas, recommendations, to attain public health goals.
Public Health Priorities
Healthy People

- Developed in 1979 by the Department of Health and Human Services
- Science-based, 10 year national objectives
- For promoting health and preventing disease
- Includes a vision, mission, goals, focus areas, criteria, objectives and action plans for achieving the targets

www.healthypeople.gov
Healthy People 2020

- Launched Dec 2010
- 600 objectives, 1300 measures
- Each objective has a reliable data source, a baseline measure, and a target for specific improvements

www.healthypeople.gov/HP2020
Healthy People 2020 -- Cancer

- Reduce the melanoma cancer death rate
  - Target: 2.4 deaths per 100,000 (10%)
  - Source: National Vital Statistics System, CDC, NCHS

- Increase the proportion of persons who participate in behaviors that reduce their exposure to harmful ultraviolet (UV) irradiation and avoid sunburn
  - Source: Youth Risk Behavior Surveillance Survey National Health Interview Survey (CDC),

www.healthypeople.gov/HP2020
Healthy People 2020 -- Cancer

- Reduce the proportion of adolescents in grades 9-12 who report sunburn (developmental)
- Reduce the proportion of adults aged 18 years and older who report sunburn (developmental)
- Reduce the proportion of adolescents in grades 9-12 who report using artificial sources of UV light for tanning (Target 14%, Current 15.6%)
- Reduce the proportion of adults aged 18 and older who report using artificial sources of UV light for tanning (Target 13.7%, Current 15.2%)

www.healthypeople.gov/HP2020
Unique opportunities for prevention
# National Prevention Council

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<td>Office of Management and Budget</td>
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<td>Office of National Drug Control Policy</td>
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<td>Department of Housing and Urban Development</td>
<td>White House Domestic Policy Council</td>
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PREVENTION ADVISORY GROUP

• 22 non-federal members
• Statutory Role:
  - Develop policy and program recommendations
  - Advise National Prevention Council on prevention and health promotion practices
Vision

Working together to improve the health and quality of life for individuals, families, and communities by moving the nation from a focus on sickness and disease to one based on prevention and wellness.
NATIONAL PREVENTION STRATEGY

- Extensive stakeholder and public input
- Aligns and focuses prevention and health promotion efforts with existing evidence base
- Supports national plans
NATIONAL PREVENTION STRATEGY

Increase the number of Americans who are healthy at every stage of life.
NPS PRIORITIES

• Tobacco Free Living
• Preventing Drug Abuse and Excessive Alcohol Use
• Healthy Eating
• Active Living
• Injury and Violence Free Living
• Reproductive and Sexual Health
• Mental and Emotional Well-being

Five Causes Account For 66% of All Deaths

- Heart Disease: 34%
- Cancer: 27%
- Chronic Lower Respiratory Disease: 23%
- Stroke: 5%
- Unintentional Injuries: 5%

NATIONAL PREVENTION COUNCIL ACTION PLAN

• Implements the National Prevention Strategy

• Released as part of the National Prevention Council’s 2012 Annual Status Report

• Highlights over 200 federal actions from the 17 federal departments

• Includes shared commitments aimed at accelerating health improvements
1. Identify opportunities to consider prevention and health within its departments and encourage partners to do so voluntarily as appropriate.

2. Increase tobacco free environments within its departments and encourage partners to do so voluntarily as appropriate.

3. Increase access to healthy, affordable food within departments and encourage partners to do so voluntarily as appropriate.
10 Great Public Health Achievements-US 1900-1999

- Vaccination
- Motor-vehicle safety
- Safer workplaces
- Control of infectious diseases
- Decline in deaths from heart disease and stroke
- Safer and healthier foods
- Healthier mothers and babies
- Family planning
- Fluoridation of water
- Recognition of tobacco as a health hazard

MMWR 1999 Apr 2;48(12):241-3.
American Everest Expedition
May 1963
“The smokers were horrified to discover that, instead of the expected 60,000 cigarettes, there were only 6,000; and everyone knows you can’t climb a mountain on that little nicotine.”

– James Ullman, 3/13/63