Public Health Metamorphosis: 
*on the road to butterfly*

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Centers for Disease Control & Prevention
Assistant Surgeon General, US Public Health Service

Bernard Guyer Lectureship in Public Health
Rochester University Medical Center
Rochester, NY, October 14, 2016
PCP pneumonia

Kaposi's Sarcoma

Cerebral toxoplasmosis
Epidemic Intelligence Service

- 2-year applied epi training
- Post-grad (e.g., MD, PhD, DVM, RN)
- Atlanta HQ or Field positions
- Outbreaks, analytic work, community and global opportunities

www.cdc.gov/eis
Public Health 3.0: Time for an Upgrade

value-based payments, potentiating innovative prevention and health-promoting care models.
Causes of Death, 1900

1. Pneumonia and influenza
2. Tuberculosis
3. Diarrhea, enteritis
4. Diseases of the heart
5. Intracranial lesions of vascular origin
6. Nephritis/kidney disease
7. All accidents
8. Cancer and other malignant tumors
9. Senility
10. Diphtheria
Crude death rate for infectious disease — United States, 1900–1996†

*Per 100,000 population per year.*


Trends in Annual Rates of Death due to the 9 Leading Causes among Persons 25–44 Years Old, United States, 1987–2013

Note: For comparison with data for 1999 and later years, data for 1987–1998 were modified to account for ICD-10 rules instead of ICD-9 rules.
Early-onset Group B Streptococcal disease, US

Source: ABCs/Emerging Infections Program Network, CDC
www.cdc.gov/abcs
Vaccines for Children
20 years of protecting America’s children

The Vaccines for Children program was established in 1994 to make vaccines available to uninsured children. VFC has helped prevent disease and save lives...big time!

CDC estimates that vaccination of children born between 1994 and 2013 will:

- **prevent 322 million illnesses**
  - more than the current population of the entire U.S.A.

- **help avoid 732,000 deaths**
  - greater than the population of Boston, MA.

- **save nearly $1.4 trillion in total societal costs**
  - (that includes $295 billion in direct costs)
  - or $4,473 for each American

www.cdc.gov/features/vfcprogram
Ten Great Achievements in Public Health, 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 drinking water
- Recognition of tobacco as a health hazard

CDC, Morbidity and Mortality Weekly Report, December 24, 1999/48(50); 1141.
Ten Great Achievements in Public Health, continuing...

- Vaccination
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CDC, Morbidity and Mortality Weekly Report, December 24, 1999/48(50); 1141.
Motor vehicle-related deaths decreased between 2007–2014

http://www.iihs.org/iihs/topics/t/general-statistics/fatalityfacts/overview-of-fatality-facts

21% drop
Major decrease in teen births between 2007–2015

CDC/NCHS, National Vital Statistics System (NVSS)* 2015 data are preliminary
Adult cigarette smoking rates have fallen in recent years


CDC/NCHS, National Health Interview Survey, 1997–2015, Sample Adult Core component; *2015 data are preliminary; http://www.cdc.gov/nchs/data/nhis/earlyrelease/earlyrelease201605_08.pdf
By 2000, infectious disease accounted for only one of top ten causes
Continued progress in heart disease, cancer and stroke

Trends in Annual Rates of Death due to 10 Leading Causes, United States, 2000–2014

Age-adjusted rate of drug overdose deaths and drug overdose deaths involving opioids, United States, 2000-2014


<table>
<thead>
<tr>
<th>Age group</th>
<th>Deaths per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 18</td>
<td>0.4</td>
</tr>
<tr>
<td>18–24</td>
<td>11.5</td>
</tr>
<tr>
<td>25–44</td>
<td>24.0</td>
</tr>
<tr>
<td>45–54</td>
<td>28.2</td>
</tr>
<tr>
<td>55–64</td>
<td>20.3</td>
</tr>
<tr>
<td>65 and over</td>
<td>5.6</td>
</tr>
</tbody>
</table>

Mortality by cause, white non-Hispanic ages 45-54

Anne Case, and Angus Deaton PNAS 2015;112:15078-15083
Rapid spread of HIV associated with injecting prescription opioids - Indiana – 2014-15

- 205 new HIV infections in Scott County
  - 4% vs. 0.6% nat’l prevalence
- ~500 adults (1/5 local pop.) actively injecting prescription opioids
- Multicomponent response including:
  - Testing for HIV, HCV
  - Treatment for HIV
  - Services for substance-use
  - State’s 1st syringe exchange program (April 4, 2015)

Vulnerability not unique

Perspective

From AIDS to Opioids — How to Combat an Epidemic

Arthur R. Williams, M.D., M.B.E., and Adam Bisaga, M.D.
CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016
lattes
mochas
coffee
espresso
iced coffee
with extras:
milk
cream
chocolate
tea
sweet tea
chai latte
green tea
iced tea
3.5
4
4.5
4
5
with boosters:
Flu
Tdap
Varicella
HPV
Zoster
MMR
PCV13
Hib
CDC Strategic Directions

Improve health security at home and around the world

Better prevent the leading causes of illness, injury, disability, and death

Strengthen public health/health care collaboration
SWINE FLU SPREADS!

Feds fear virus could turn deadly in U.S.
Mayo says don’t panic as cases continue.

FLU SHOTS
LINCOLN SCHOOL H1N1 VACCINE CLINIC
K-12

4PM-8PM

TODAY
SEE PAGE 10
NEW YORK
BEATDOWN
LOST WEEKEND
AT PENN STATE
SHEEP YARNS
SEE SPORTS
# CDC Ebola response by the numbers

## Overall

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total CDC deployments</td>
<td>3,234</td>
</tr>
<tr>
<td>CDC staff involved in the response</td>
<td>&gt;3,940</td>
</tr>
<tr>
<td>Questions answered by CDC’s national contact center</td>
<td>&gt;36,600</td>
</tr>
</tbody>
</table>

## Domestic

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travelers monitored by health departments</td>
<td>&gt;32,700</td>
</tr>
<tr>
<td>Domestic clinical inquiries</td>
<td>1,423</td>
</tr>
<tr>
<td>US hospitals designated as Ebola treatment centers</td>
<td>55</td>
</tr>
<tr>
<td>US labs approved to test for Ebola</td>
<td>57</td>
</tr>
</tbody>
</table>

## International

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDC staff have deployed to West Africa</td>
<td>1,387</td>
</tr>
<tr>
<td>CDC person work-days in West Africa</td>
<td>&gt;66,000</td>
</tr>
<tr>
<td>Samples tested at CDC’s lab in Bo, Sierra Leone</td>
<td>&gt;27,000</td>
</tr>
<tr>
<td>Health workers trained in West Africa</td>
<td>24,655</td>
</tr>
<tr>
<td>Travelers leaving West Africa screened for Ebola</td>
<td>&gt;455,300</td>
</tr>
<tr>
<td>US health workers trained to work in West Africa (Anniston)</td>
<td>&gt;600</td>
</tr>
<tr>
<td>Health and frontline workers enrolled in Ebola vaccine trial</td>
<td>8,680</td>
</tr>
</tbody>
</table>

Last updated December 07, 2015
Microcephaly cases linked to Zika virus rise in Brazil

Most of the cases of microcephaly brain defect remain concentrated in Brazil's poor northeastern region

The Associated Press  Posted: Jan 20, 2016 2:08 PM ET  |  Last Updated: Jan 20, 2016 6:14 PM ET

A health agent from Sao Paulo's public health secretary shows a soldier Aedes aegypti mosquito larvae that she found during clean up operations against the insect that transmits Zika virus. (Andre Penner/Associated Press)
Build a more integrated, effective health system through collaboration between clinical care and public health

High-burden health conditions

Evidence-based interventions that can improve health and save money

cdc.gov/sixeighteen
SIX WAYS TO SPEND SMARTER FOR HEALTHIER PEOPLE

- Reduce tobacco use
- Control blood pressure
- Prevent healthcare-associated infections (HAI)
- Control asthma
- Prevent unintended pregnancy
- Control and prevent diabetes
75 million US adults have hypertension
But many are not aware or treated (hiding in plain sight) and only about half have it controlled

Prevalence of Awareness, Treatment, and BP Control, MN Heart Survey (Men 25–74)

- 1988: Buyers Health Care Action Group launched
- 1992: MinnesotaCare program launched
- 1993: ICSI established
- 1996: HealthPartners begins public reporting; MN joins BHCAG
- 1999: All MN health plans including BHCAG accept ICSI guidelines
- 2000: MN releases 1st Minnesota Care (MNCM) established
- 2001: BHCAG hosts symposium with 250 stakeholders
- 2004: MN releases 1st HDSP Strategic Plan
- 2007: MN adopts 2015 EHR Mandate; MNCM makes data public for first time
- 2010: MN releases 1st Quality Report, including data for optimal diabetes and vascular care
Completing the metamorphosis

- From innovation . . . to implementation
- From where it’s easy . . . to everyone
- From denominators . . . to democracy
- From invisible . . . to unforgettable