PUBLIC HEALTH IN THE TIME OF CHOLER

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Oregon Chapter of the American College of Physicians, November 7, 2019
Chapter 1: *Measles*
Measles in the United States: 2019

- Most cases in 27 years
- Several outbreaks driving case counts
  - Occurring in close-knit communities
  - Most unvaccinated
- From January 1 – October 1, 2019, 1,249 cases reported to CDC*
- 2nd highest number of reported outbreaks since U.S. elimination in 2000

*Source: MMWR, October 11, 2019 / 68(40);893–896

Most people with measles were unvaccinated

United States, January 1 – October 1, 2019  (n=1,249 cases)

*Source: MMWR, October 11, 2019 / 68(40);893–896
Most people with measles were children
United States, January 1 – October 1, 2019  (n=1249 cases)

- 5 - 17 yrs: 27%
- 6 - 11 mos: 22%
- 16 mos - 4 yrs: 9%
- 12 - 15 mos: 9%
- 6 - 11 yrs: 25%
- <6 mos: 3%
- 18 - 49 yrs: 4%
- 50+ yrs: 3%
- 27%
- 22%
- 9%
- 9%
- 3%
- 4%

*Source: MMWR, October 11, 2019 / 68(43):939-936
Attends Services 5 times in 4 days at a Synagogue with 10,000 capacity
Vaccine conference call tonight, October 28, Sunday eve, due to the measles hysteria. From 9-10 pm, call 712-XXX-XXXX PIN number 160754#.

Very few US toddlers receive no vaccines at all, but this group is increasing slightly.

Percentage of 0 dose children

Source: National Immunization Survey, MMWR October 17, 2019, 19-35 months at time of survey

Slide courtesy of R. McDonald NY State Department of Health
Ebola 2014-16: Lessons Learned

1. Each country must be able to *prevent, detect, and respond* to threats.
2. When countries are overwhelmed the international community must be able to *surge in*.
3. Health care *infection control* is critical.
4. The pace of *research* needs further acceleration.
5. Effective engagement of communities is essential.
"Are these urban flares the new norm? What might the ebb and flow of intervention and violence bode for future epidemics? Insights from the front lines may offer some clues."

Perspective
An Epidemic of Suspicion — Ebola and Violence in the DRC
Vinh Kim Nguyen, M.D.

April 4, 2019
N. Engl. J. Med. 380, 1298–1299
DOI: 10.1056/NEJMra1802880
**Number of Ebola Cases by Health Zone in DRC, 2018-2019**

Geographical distribution of confirmed and probable Ebola virus disease cases by health area

**Confirmed and probable Ebola virus disease cases by week of illness onset, as of Oct. 24, 2019**

- Malabola
- Mandina
- Butembo
- Mabalaka
- Kindu
- Uvira
- Other health zones

**What’s New or Not-so-New with Ebola DRC 2018-19**

- Ebola outbreak in conflict zone.
- Decentralized diagnostic capacity (gene-Xpert).
- Large-scale use of ring vaccination.
- Systematic evaluation of treatments.
  - Two [REGN-EB3 and mAb114] were successful and now given to all Ebola patients.
- Infected HCWs and nosocomial spread once again important.
- Renewed efforts at community engagement.

Chapter 3: Water, lead, & Legionella

The Flint water crisis: A loss of trust
Health impacts after the 2014 change in Flint’s water source
Legionnaires Disease outbreak after Flint water switch

Long Term Flint Response

- Government, academic, philanthropic/non-profit partnerships
- Community informed/driver/participatory
- Grounded in science and trauma-informed
- Focused on secondary prevention
  - Home visiting
  - Breastfeeding
  - Childcare
  - Literacy
  - School health
  - Medicaid expansion
  - Behavioral health
  - Nutrition support
  - Mindfulness
Chapter 4: Opioids

The Opioid Overdose Epidemic and Pain in America
A Multi-layered Problem in 3 Distinct Waves (and counting)

Opioid, HIV, and HCV Problems in Rural Indiana

- >233 people with HIV
- 90% had HCV coinfection
- 5% adults with HIV (population 3,143)
- Over $100 million in lifetime medical costs

Drug Overdoses and Hepatitis C: Interconnected Problems

- Drug Overdose Death Rates
- Reported New HCV Infections

SOURCE: CDC/NCHS Data Visualization Gallery 2015

SOURCE: CDC National Notifiable Disease Surveillance System 2015-16

March 2016
Decreasing opioid prescriptions after CDC’s 2016 Guidelines

But still too much — three times rate of prescribing in Europe

*Guy et al, JAMA Internal Medicine, Feb 11, 2019*
Doubling of prescribed naloxone, from 2017 to 2018

Major changes in opioid and naloxone dispensing occurred from 2017 to 2018.

High-dose opioid prescriptions

- 2017: 48 Million
- 2018: 38 Million

Naloxone prescriptions

- 2017: 270,000
- 2018: 556,000

Chapter 5:
Vaping outbreak &
E-cigarettes epidemic
Outbreak of E-Cigarette or Vaping-associated Lung Injury (EVALI)

1,888 cases as of October 31, 2019

Number of Lung Injury Cases Reported to CDC as of October 29, 2019

Legend
- 0 cases
- 1-9 cases
- 10-49 cases
- 50-99 cases
- 100-149 cases
- 150-199 cases
- 200+ cases

URL: https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html
Chest Radiographs and High-Resolution Computed Tomographic Imaging in a 17-Year-Old Male Patient with Diffuse Lung Disease.

Dates of symptom onset and hospital admission for patients with lung injury associated with e-cigarette use, or vaping — United States, March 31–October 26, 2019

https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html
Annual HIV Infections in the U.S.
Declined 15% in 2008-2013, Plateaued since

One in 10 new HIV infections occur among people who inject drugs - a decade of progress now threatened.

Prevented 34,000 cases at estimated cost savings for medical care of over $16 billion* 

Note: Estimates were derived from a CD4 depletion model using HIV surveillance data.
Farnham PG et al. Updates of lifetime costs of care and quality of life estimates for HIV-infected persons in the United States: Late versus early diagnosis and entry into care.
Overall trends don’t tell the whole story

Diagnosis and Treatment Status of Persons Living with HIV in the United States and Ten African Countries
Ending the HIV Epidemic:
A Plan for America

**PHASE 1:** Focused effort to reduce new diagnoses by 75% in 5 years

**PHASE 2:** Widely disseminated effort to reduce new diagnoses by 90% in the following 5 years

**PHASE 3:** Intense case management to maintain the number of new diagnoses at < 3,000 per year

**GOAL:**
75% reduction in new HIV infections in 5 years
and at least 90% reduction in 10 years.

The President’s FY 2020 Budget requests $140 million for CDC in Year 1. Strategy includes:

- **Diagnose:** Bring HIV testing to everyone who needs it and diagnose infections as early as possible.
- **Treat:** Promote rapid comprehensive care and start treatment at time of diagnosis.
- **Prevent:** Prevent new HIV transmission by using proven interventions, including PrEP & SSPs.
- **Respond:** Accelerate deployment of effective cluster detection and response systems.
- **Workforce:** Support on the ground teams to help tailor and ensure effective implementation.

CDC promotes the health of all Americans by preventing HIV infection and reducing HIV-related illness and death.
Strategies for public health today

- Reliance on strong evidence-base
- Commitment to accountability
- Assuring political will
- Sustaining a sense of urgency
- Engaging communities, building trust
“He found a glimmer of hope in the ruins of disaster”

— Gabriel García Márquez

*Love in the Time of Cholera*
Extra slides
Measles Worldwide: 2019

Top 10* Country Cases

- Madagascar 40784
- India** 35904
- Ukraine 31111
- Philippines 20394
- Nigeria 18644
- Kazakhstan 6429
- DR Congo 5742
- Brazil 4379
- Angola 2748
- Myanmar 2711

Notes: Based on data received 2019-10 - Surveillance data from 2019-03 to 2019-08 - * Countries with highest number of cases for the period - **WHO classifies all suspected measles cases reported from India as measles clinically compatible if a specimen was not collected as per the algorithm for classification of suspected measles in the WHO VPD Surveillance Standards. Thus numbers might be different between what WHO reports and what India reports.

Geographic Clusters of Under-immunization

- Unimmunized tend to cluster together, creating areas at higher risk for outbreaks
- Type of exemption policy is linked to exemption frequency

Lieu TA. Pediatrics, 2015
Wang E. AJPH, 2014
Viral Suppression improves health and prevents new infections

Of the 1.1 million persons with HIV, only half are virally suppressed

91% of new U.S. HIV infections are transmitted from people not diagnosed or diagnosed, but not in care

Diagnosed 85%
Received any HIV Care 62%
Viral Suppression 49%

13-24 year olds:
56%
41%
27%


Provisional numbers: bending curve for opioid overdose deaths

Based on data available for analysis on: 10/6/2019

Figure 1a. 12 Month-ending Provisional Counts of Drug Overdose Deaths: United States
48 counties, 7 States with Substantial Rural HIV Burden, DC and San Juan Account for 50% of New Diagnoses

Images of E-Cigarette or Vaping-Associated Lung Injury (EVALI) in Four Patients

Use of flavored e-cigarettes has increased markedly among high school students who use tobacco products

Percentage of current (last 30 days) users of tobacco products
Source: MMWR / October 4, 2019 / Vol. 68 / No. 39