

100 Years Later

How we have (and haven't) prepared for the next Pandemic

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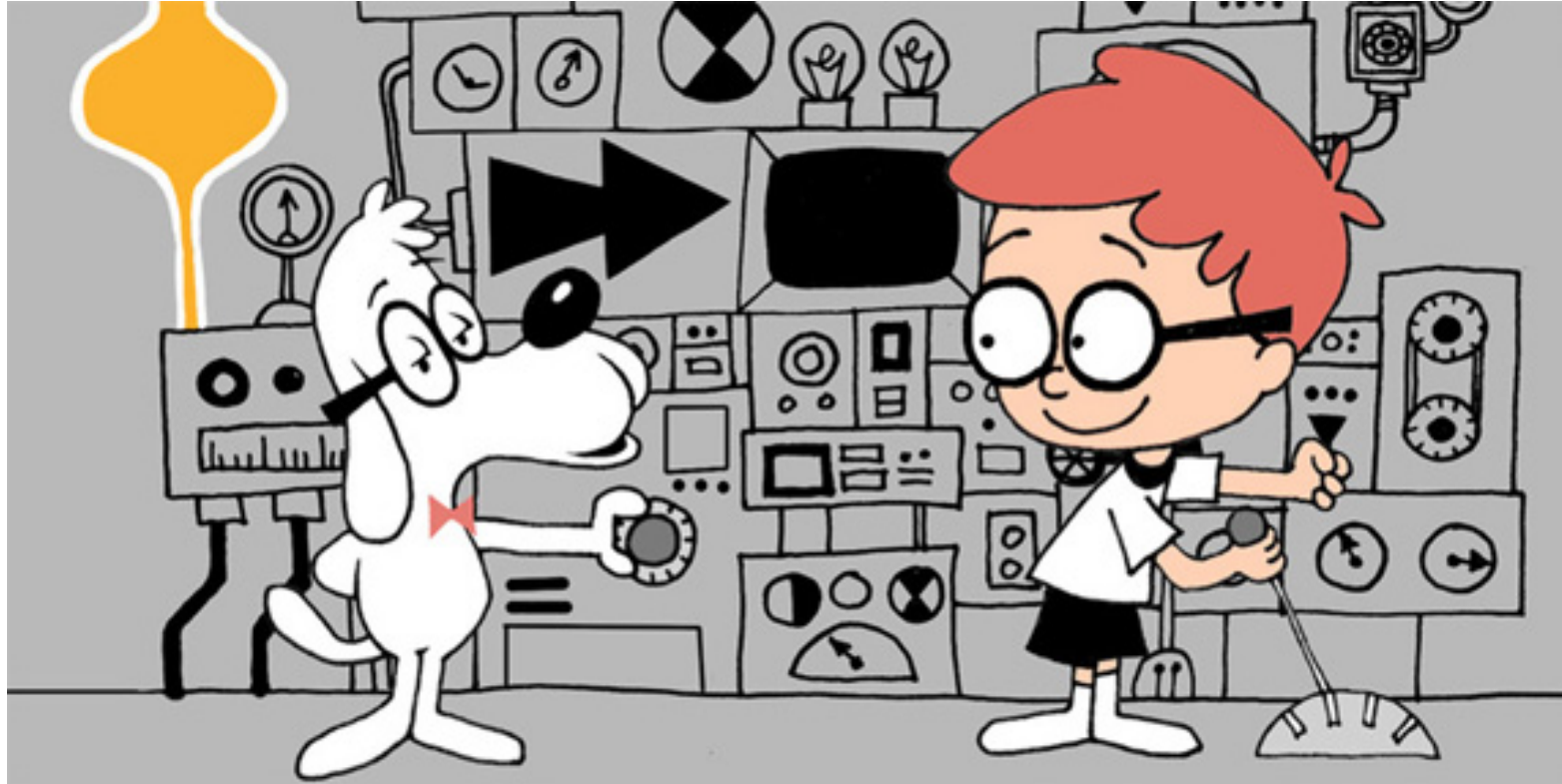
Director, Bureau of Public Health Preparedness

17 October 2017

➤ Agenda

- The last 100 years – public health and medical advances
- The last 16 years – the advance of “preparedness”
- Where are we at right now
- What we still need to do

➤ Take a step back in time...



▶ ...to 1918

- Middle of one of the largest disease outbreaks



➤ 1918 Pandemic by the Numbers

- 30-35% of the world's population affected¹
 - ▣ 500 Million people
- Case fatality rate $\sim 2.5\%$ ¹
 - ▣ 50 Million deaths
- 12-14 Months

1. Taubenberger, Jeffery K., and David M. Morens. "1918 Influenza: the Mother of All Pandemics." *Emerging Infectious Diseases* 12, no. 1 (November 2006): 15-22.
doi:10.3201/eid1201.050979.

➤ 1918 Pandemic by the Numbers

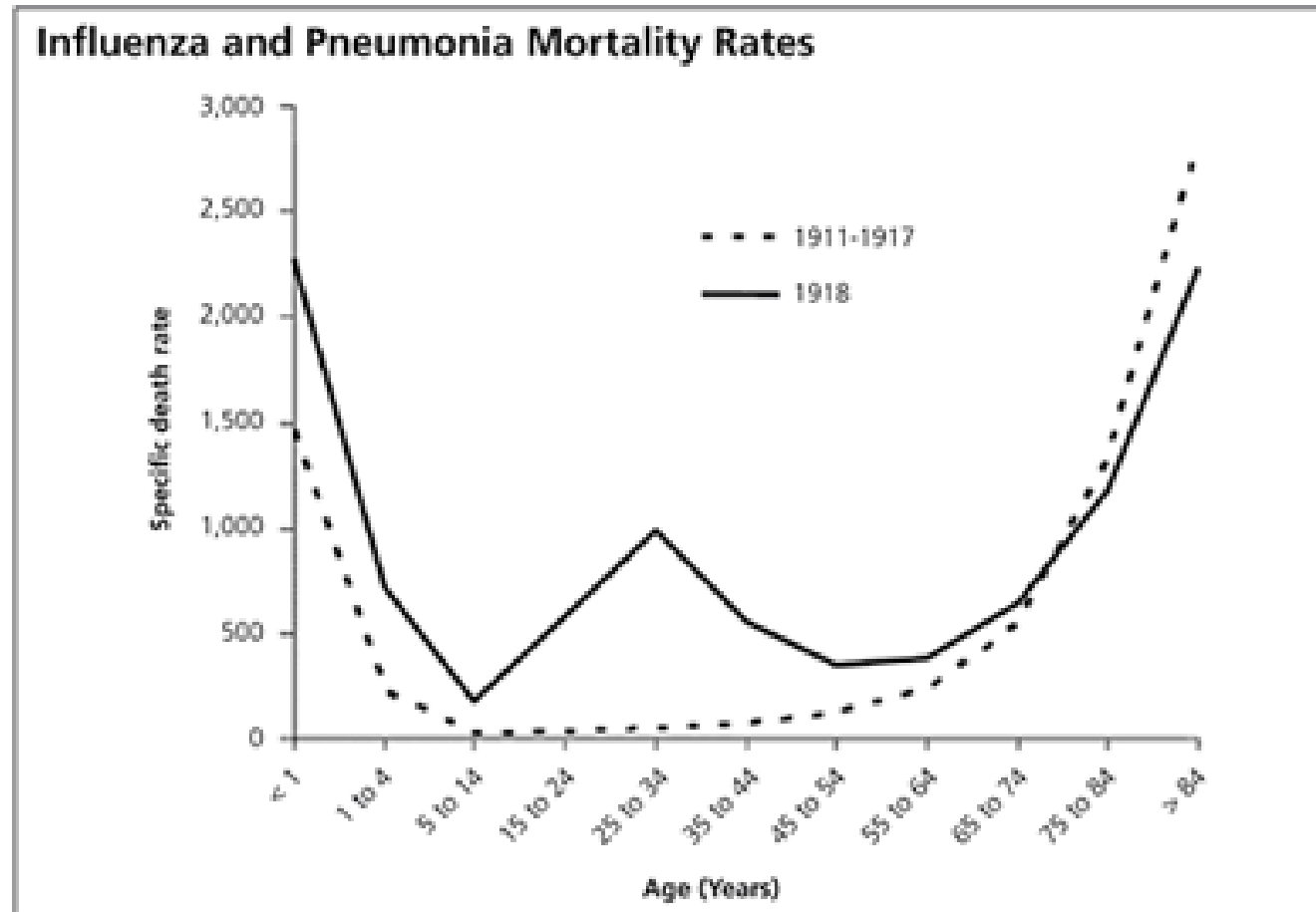
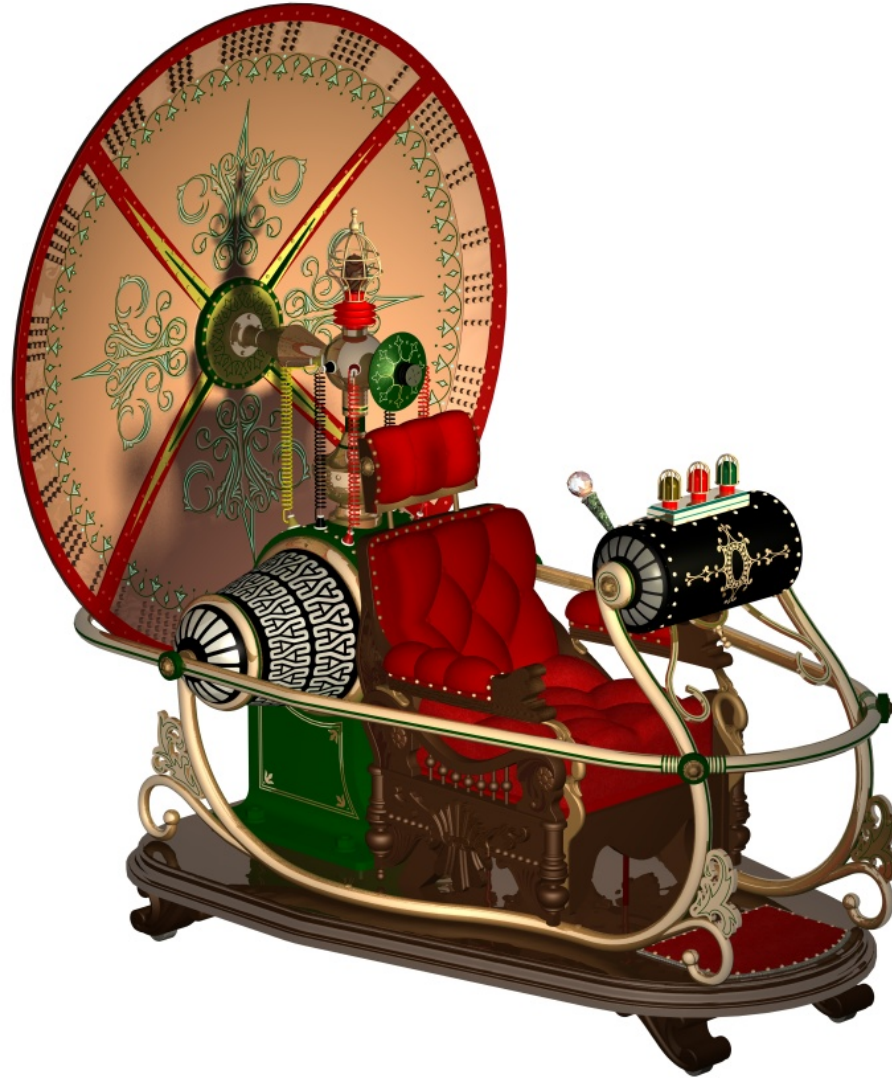


Figure 3. U- and W-shaped combined influenza and pneumonia mortality rates, by age at death, per 100,000 persons in each age group (United States, 1911 to 1918). Influenza- and pneumonia-specific death rates are plotted for the inter-pandemic years (1911 to 1917, dashed line) and for the pandemic year (1918, solid line).

Reprinted from Grove RD, Hetzel AM. *Vital Statistics Rates in the United States: 1940-60*. Washington: U.S. Government Printing Office, 1968, and Linder FE, Grove RD. *Vital Statistics Rates in the United States: 1900-1940*. Washington: U.S. Government Printing Office, 1943.

➤ Now jump back in our time machine...



➤ And in 2017, how would that affect us?

- 30-35% of the world's population affected
 - ▣ **2.28-2.66 BILLION sickened worldwide**
 - ▣ **96.9-113.1 MILLION in the US**
 - ▣ **3.8-4.5 MILLION in Pennsylvania alone**
- 2.5% case fatality rate
 - ▣ **190 Million dead globally**
 - ▣ **8.1 Million in the US**
 - ▣ **320 Thousand deaths in Pennsylvania**

But Wait...
**THERE'S
MORE!**

➤ Impact of the 1918 Influenza on 2017 Health Care System

- Within Pennsylvania, assume 10% of those impacted need inpatient care
 - ▣ 380,000 to 450,000 need inpatient care
- Guess how many inpatient beds in PA Hospitals?
 - ▣ ~39,000 total licensed beds in PA hospitals
 - ▣ All beds (including specialty, ER, others)
 - ▣ Also, take in to account current census (often at least 80 to over 100%)

➤ Fortunately...

- The public health and healthcare sectors have come a long way in the last 100 years
- Greatly reduced risk of a pandemic with a similar impact



➤ First, some definitions

- What is public health???
 - ▣ NOT primary care (making sick people better)
 - ▣ Preventive in nature
 - ▣ Deals with population, not individuals
- What is healthcare???
 - ▣ Systems and personnel focused on healing
 - ▣ Injury or illness
 - ▣ Deals with individuals (patients), not populations

➤ First off, Public Health



**World Health
Organization**



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APHA

AMERICAN PUBLIC HEALTH ASSOCIATION
For science. For action. For health.



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➤ So what all has changed?

- CDC Identified “Top 10 Accomplishments of public health in the 20th Century”
 - ▣ Immunizations
 - ▣ Motor-Vehicle Safety
 - ▣ Workplace Safety
 - ▣ Control of Infectious Diseases
 - ▣ Declines in Deaths from Heart Disease and Stroke
 - ▣ Safer and Healthier Foods
 - ▣ Healthier Mothers and Babies
 - ▣ Family Planning
 - ▣ Fluoridation of Drinking Water
 - ▣ Tobacco as a Health Hazard
- CDC: “public health in the 20th century has added 25 years to the lifespan of residents of the United States”

➤ Contributing Factors to Improved Public Health²

- Quantitative analysis
 - ▣ First analytical survey of public health issues conducted in 1947
 - ▣ First modern clinical trials of pharmaceuticals in 1948 and first case-control public health study in 1951
- Standardized Health Surveys
 - ▣ Implementation of local, state and national health data collection allows public health officials to understand the communities being served and the efficacy of their interventions.

2. "Achievements in Public Health, 1900-1999: Changes in the Public Health System." *MMWR Weekly* 48, no. 50 (December 24, 1999): 1141-147.

➤ Contributing Factors to Improved Public Health²

- Morbidity and Mortality Surveillance
 - Since 1850, the federal government has been monitoring health concerns
 - Cause of death
 - Starting 1878, Congress authorized data collection on cholera, smallpox, plague, and yellow fever for quarantine measures
 - By 1998, 52 infectious diseases are notifiable to the CDC (requiring state and local providers to inform CDC)
 - Focus since 1950s has shifted from tracking causes of death to more “real time” monitoring for public health interventions.

2. "Achievements in Public Health, 1900-1999: Changes in the Public Health System." *MMWR Weekly* 48, no. 50 (December 24, 1999): 1141-147.

➤ Contributing Factors to Improved Public Health²

- Public Health Training

- Professional shift from Physicians to public health professionals
- First public health school opened in 1916 (Johns Hopkins School of Hygiene and Public Health)
- In 1999, 29 accredited schools of public health with 15,000+ students

2. "Achievements in Public Health, 1900-1999: Changes in the Public Health System." *MMWR Weekly* 48, no. 50 (December 24, 1999): 1141-147.

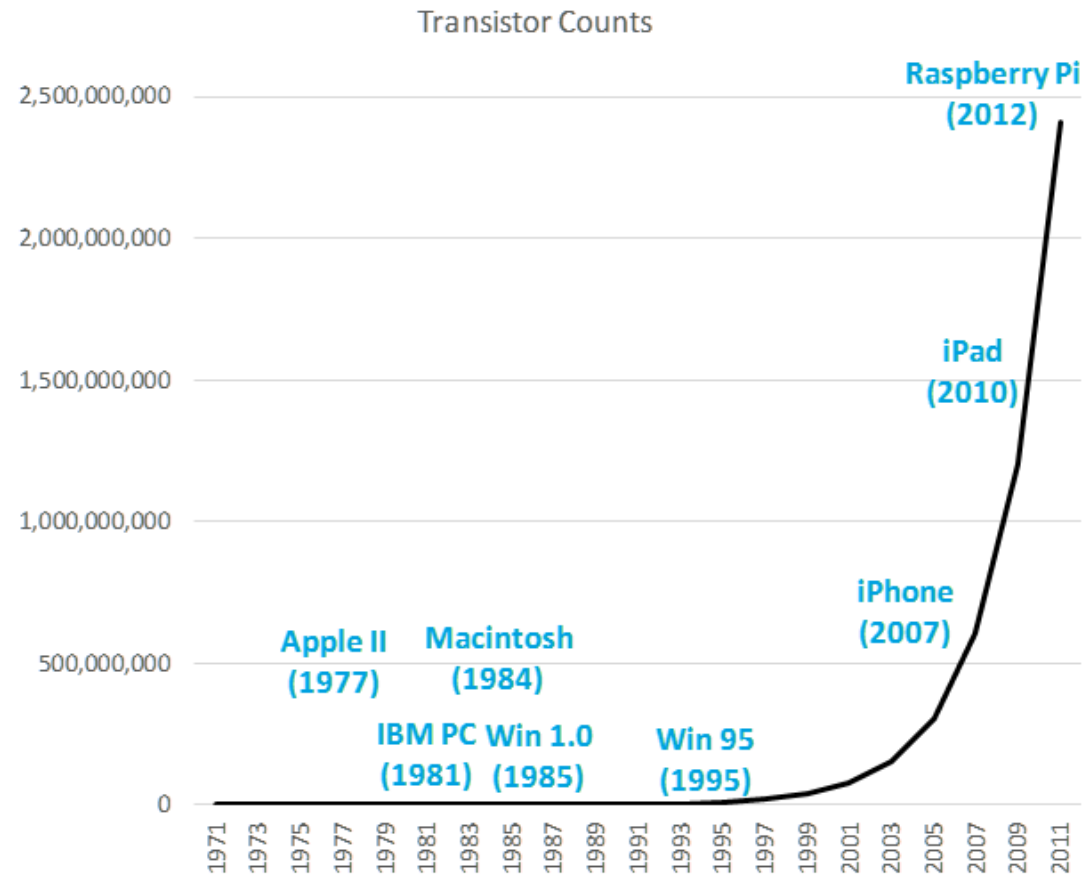
➤ Contributing Factors to Improved Public Health²

- Governmental Public Health Infrastructure
 - ▣ Massive evolution in public health systems over the last century
 - ▣ State health departments
 - ▣ County/Local Health Departments
 - ▣ Federal programs – CDC, NIH, USPHS
 - ▣ Public Health workforce

2. "Achievements in Public Health, 1900-1999: Changes in the Public Health System." *MMWR Weekly* 48, no. 50 (December 24, 1999): 1141-147.

➤ Other factors to public health improvement

- Moore's Law?



➤ Technological systems for advancing public health

- Surveillance systems
- Advances in biomedical research and development
 - ▣ Vaccine development
 - ▣ Disease research – whole genome sequencing
- Data analytics and spatial/temporal data (GIS)

➤ To make a long story short...

...public health has come a long way in 100 years

But what about the healthcare side??

➤ Healthcare has advanced, too



➤ Contributing factors to improved health care³

- Cultural shifts
 - ▣ Integration of hospitals and health care services
 - ▣ Reduction of smoking (overall in and in HC setting)
 - ▣ 50% of hospitals are now completely smoke free
- Practice shifts
 - ▣ Staffing model
 - ▣ 1st half of 20th century: Doctor or (minimally trained) nurse
 - ▣ 2nd half: Doctor, Physician Assistant, Nurse Practitioner, nurses of various degrees
 - ▣ Duration of hospital stays

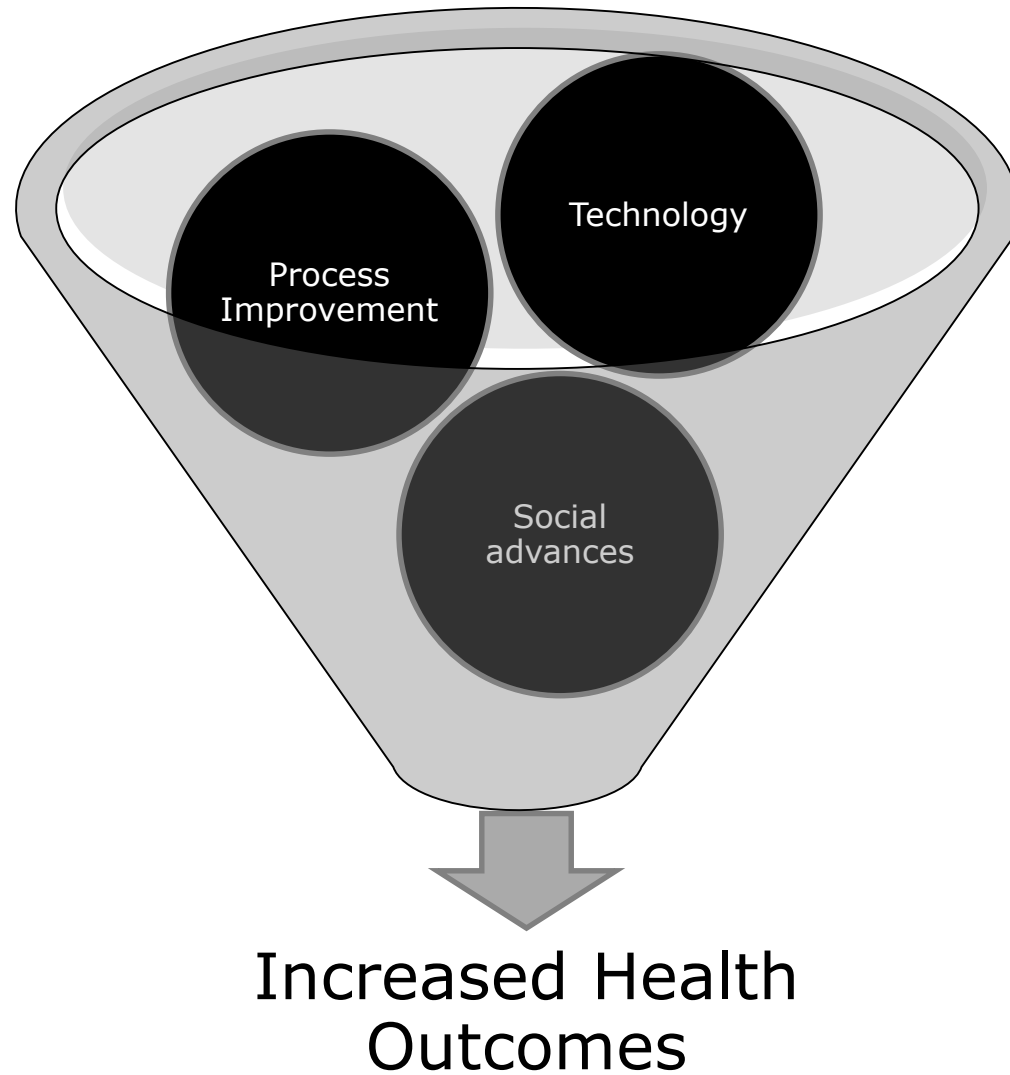
3. Leonard, Kimberly. "Hospital of Yesterday: The Biggest Changes in Health Care." *US News and World Report*, July 15, 2014.

➤ Contributing factors to improved health care

- Standardization and accreditation
 - ▣ 1917-1950 – American College of Surgeons *Standards for Hospitals*
 - ▣ 1951 – Joint Commission
 - ▣ CMS Requirements and Regulations
 - ▣ Emergency Preparedness requirements

➤ Contributing factors to improved health care

- Technological advances (Moore's law)
 - ▣ Research and development
 - ▣ Health information/Electronic Medical Records
- All factors towards more effective and efficient health care delivery



➤ The last 16 years...

- Systemic improvements versus focused preparedness

Or...

Welcome to my world!!

➤ Advent of Health and Medical Preparedness

- Over the last 16 years, evolution of focused preparedness efforts
- Federal (congressional and executive) direction
- State and local implementation

➤ History of Health/Medical Preparedness

- 2 kickoff moments
 - ▣ 9/11/2001 & Amerithrax – focused nation's efforts on disaster preparedness to a degree not seen before
 - ▣ Hurricane Katrina – emphasized need for improved local, state and federal coordination
- Other paradigm shifters
 - ▣ 2009 H1N1



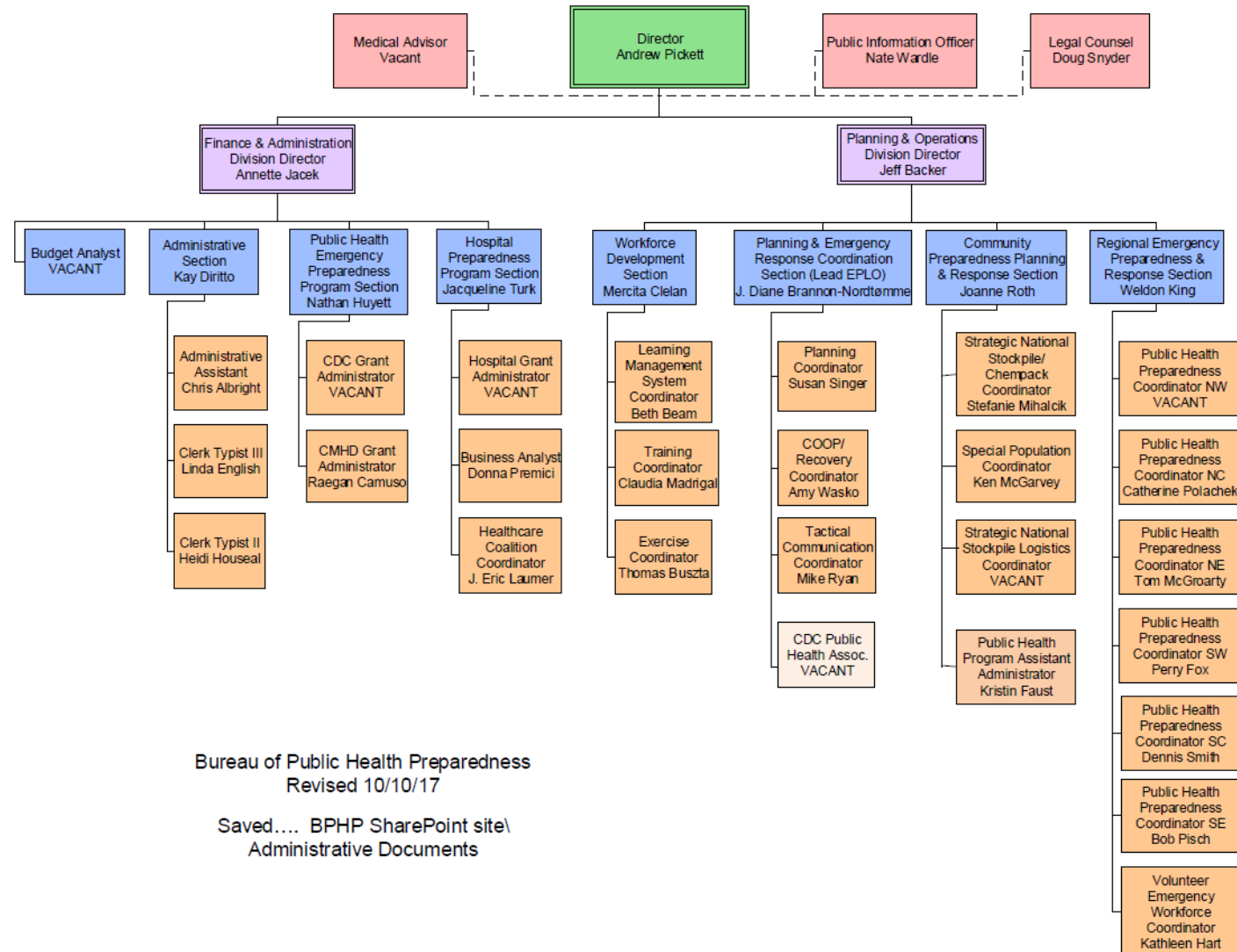
History of Health/Medical Preparedness

- Federal timeline
 - Pre 9/11 – Individual entities who may or may not have any level of preparedness
 - 2002 – Federal funding for public health and health care bioterrorism preparedness
 - 2006 – Pandemic and All Hazards Preparedness Act (PAHPA)
 - 2012 – Capability based approach
 - 2017/2018 – Updated capabilities/Domains

Domains of Preparedness

- Community Resilience
- Incident Management
- Information Management
- Countermeasures and Mitigation
- Surge Management
- Biosurveillance

Implementation in Pennsylvania



Implementation in Pennsylvania



EMERGENCY OPERATIONS BASE PLAN

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Implementation in Pennsylvania

Overarching
Ideas

Base Plan

Strategic
Information

Annex

Annex

Tactical
Operations

Appendix

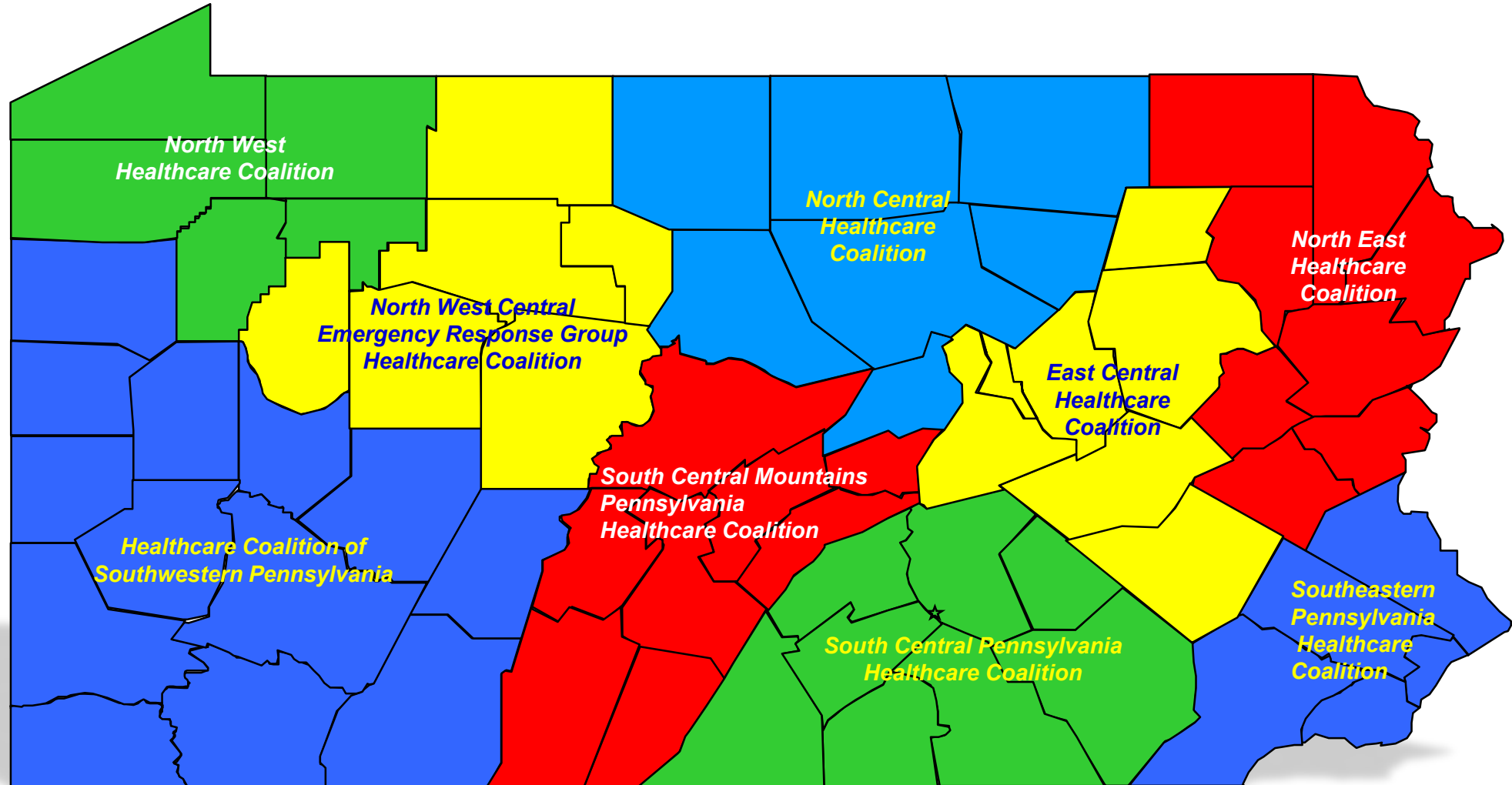
Forms/SOPs

Appendix

► Implementation in Pennsylvania

- Emergency Operations Coordination
- Continuity of Operations and Recovery
- Mass Casualty/Medical Surge
- Mass Distribution of Medical Countermeasures
 - ▣ Mass Vaccination
- Mass Fatality Management
- Logistics
- Public Information
- Volunteer Management
- Infectious Disease
 - ▣ Pandemic Influenza

Implementation in Pennsylvania

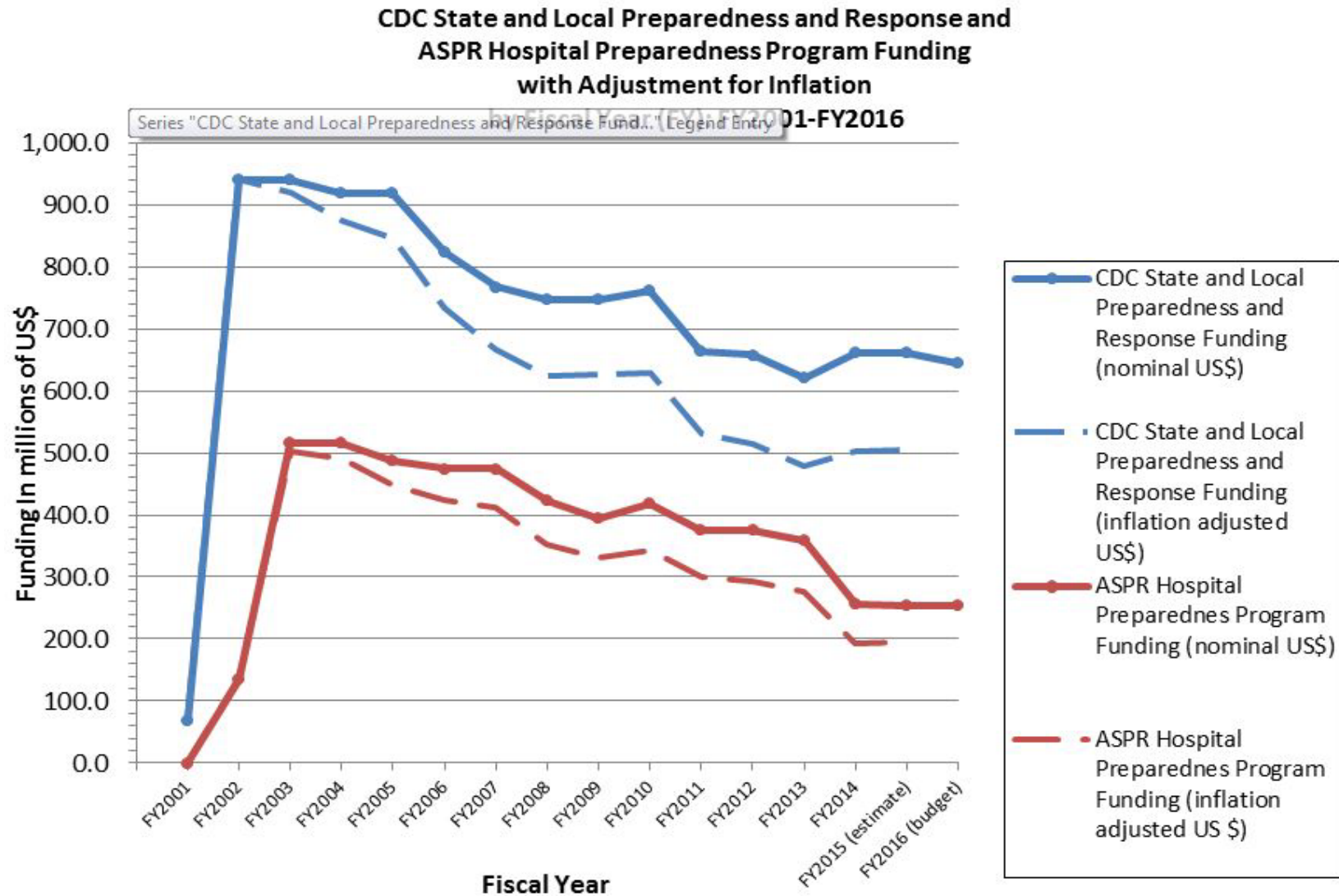


➤ Federal Efforts to Improve Preparedness

IMPROVEMENTS IN PUBLIC HEALTH EMERGENCY PREPAREDNESS SINCE 9/11

PHEP JURISDICTIONS WHO:	THEN	NOW
Can mobilize staff during an emergency	20%	98%
Have an Incident Command System with pre-assigned roles in place	5%	100%
Have identified point-of-dispensing (POD) sites	0%	100%
Have sufficient storage and distribution capacity for critical medicines and supplies	0%	98%

➤ Yet at the same time...





➤ Andy's Synopsis – the positives

- Generally, the public health and medical infrastructure have improved greatly since 1918
- We have focused plans and protocols in place to detect and mitigate the next pandemic
- We have plans and protocols to treat individuals and prevent spread of the next pandemic

➤ Andy's Synopsis – the negatives

- Global surveillance is lacking, especially in less developed nations
- Vaccine development is still a lengthy process
- The healthcare system will never be truly ready to deal with the hospitalization rates of another 1918 pandemic


➤ What does this mean for all of us?



➤ Opportunities for Involvement

- Individual preparedness
 - ▣ Do YOU have an emergency plan?
 - ▣ Do you have emergency kits?
 - ▣ Creating a culture of preparedness leads to resilient communities
 - ▣ Know what to do during a disaster
 - ▣ Have a communications plan
 - ▣ Have an emergency kit – supplies, food, water for 72 hours
 - ▣ www.ready.pa.gov for resources

A close-up photograph of a flashlight with its beam turned on, casting a bright, circular glow on a dark, reflective surface. The flashlight is positioned diagonally in the upper left corner. The background is dark and moody, with the light from the flashlight creating a strong contrast and a soft reflection on the surface below.




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PENNSYLVANIA EMERGENCY PREPAREDNESS GUIDE

Plan ahead. Be prepared.

www.ReadyPA.org

1-888-973-2397



Ready.PA



➤ Opportunities for Involvement


- Local/regional volunteer programs
 - ▣ Medical Reserve Corps
 - ▣ Philadelphia, Delaware, Chester, Montgomery, Bucks, Lancaster, Allegheny and Erie Counties; Allentown and Bethlehem Cities
 - ▣ Many will accept volunteers from nearby areas
 - ▣ Visit mrc.hhs.gov to search for MRC unit contact information
 - ▣ DOH Regional Volunteer Units

➤ Opportunities for Involvement

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STATE EMERGENCY REGISTRY
OF VOLUNTEERS IN PENNSYLVANIA



- Home
- Register Now
- Contact Us
- FAQ
- Links
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- Privacy Policy
- Operations Manual

Welcome to SERVPA, the Commonwealth of Pennsylvania's online registry for medical and non-medical volunteers.

If you would consider volunteering for emergency disaster response efforts, you've come to the right place! SERVPA is your secure, confidential volunteer registry site. Registering through SERVPA simply tells us that you are open to the idea of volunteering in case of an emergency and provides us a little about your background, preferences, and constraints. It does not guarantee that you will be called upon, nor does it mean that you must participate if called. If you are called to volunteer, you will have the opportunity to learn more about the specific event and the commitment required. You can then choose if volunteering for the specific event is right for you.

During the online registration process, you will be asked to enter information regarding the best way to contact you, any active licenses or certifications, and other relevant background data. If you have already completed the registration process or wish to return to a registration which you've started but not completed, you can log in and update your profile.

REGISTER NOW


Username:

Password:

Log In

[Forgot Username or Password?](#)

[Not Registered?](#)

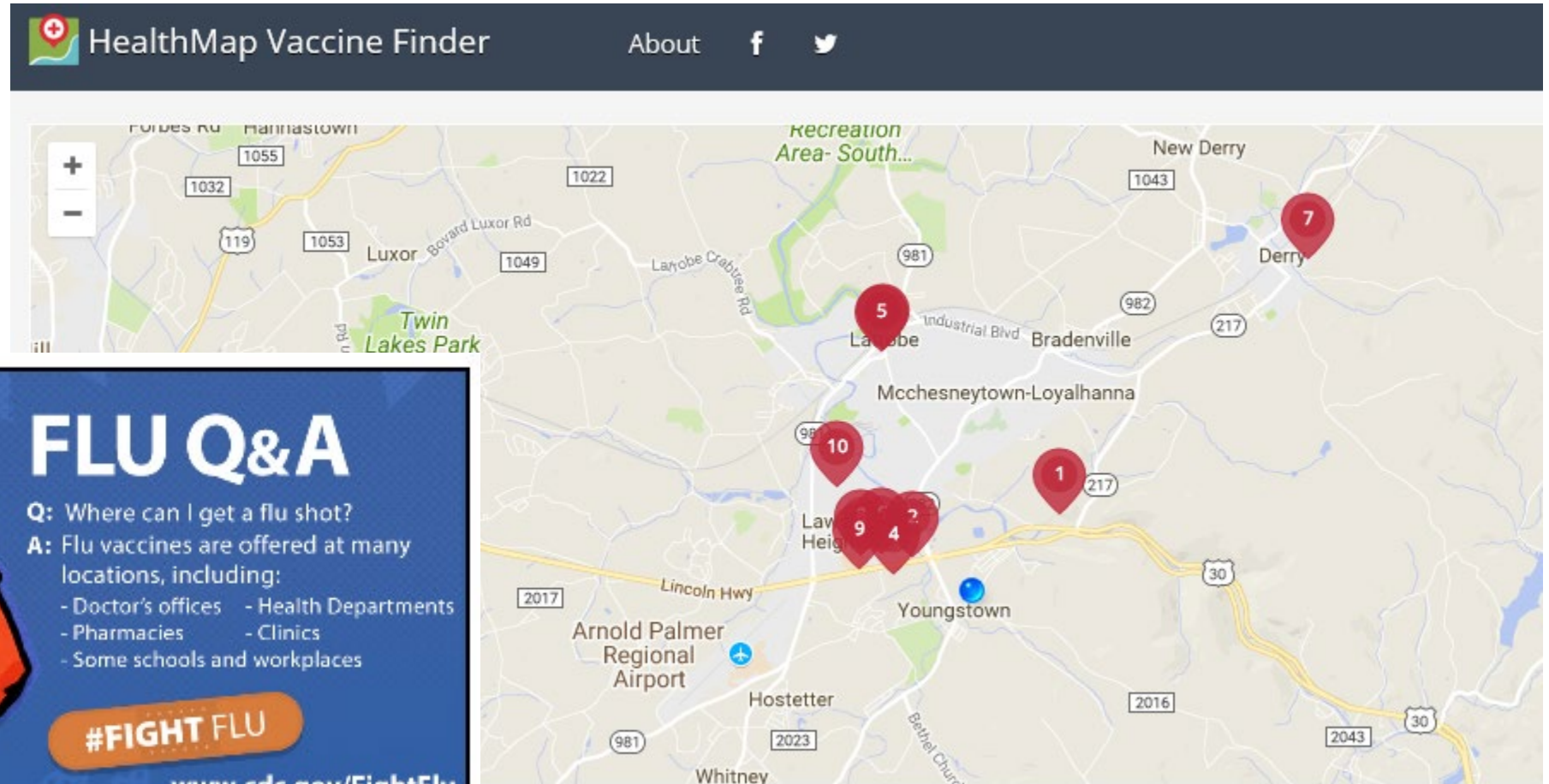


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➤ Opportunities for Involvement

- Take care of your health and don't be the cause of the next pandemic!
 - ▣ Get your seasonal influenza vaccine
 - ▣ Wash your hands regularly, especially during flu season
 - ▣ Avoid contact with animals, especially when either you or they are ill, and wash hands after contact with them
 - ▣ Stay home when you are sick to avoid spreading the illness

➤ Opportunities for Involvement



FLU Q&A

Q: Where can I get a flu shot?

A: Flu vaccines are offered at many locations, including:

- Doctor's offices
- Health Departments
- Pharmacies
- Clinics
- Some schools and workplaces

#FIGHT FLU

www.cdc.gov/FightFlu

➤ So to sum it all up...

- We've come a long way in the last 100 years
- Another 1918 pandemic is very unlikely, and if it happens, the health and medical landscape is much different
- There is a lot of work at many levels to prevent and prepare for another pandemic
- There are many things YOU can do to get involved!

Questions?



➤ Thank you!

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