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Defense Health Agency

Public Health Division

Pandemic Prevention, Detection, and Response

National Defense Industrial Association
Planning Pandemic Prevention - Preserving Posterity

21 October 2016

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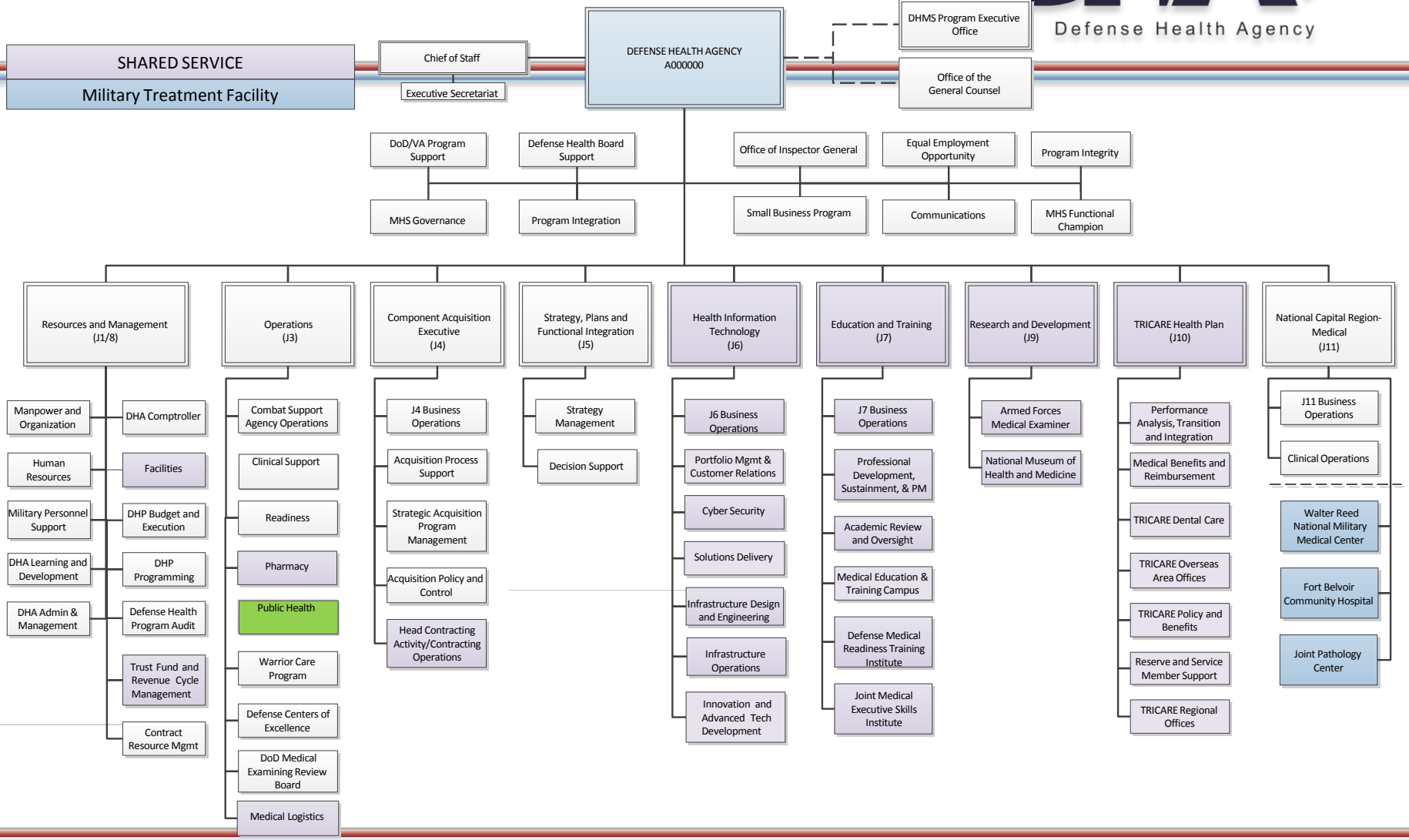

Global Health Security Agenda (GHSA) Vision

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A world safe and secure from global health threats posed by infectious diseases, whether naturally occurring, deliberate or accidental

Role of DoD in Global Health Security

- The mission of the Department of Defense is to provide the military forces needed to deter war and to protect the security of our country
    - Military forces need to be healthy to execute this mission
    - Outbreaks of infectious diseases threaten not only health but also geopolitical stability
    - Infectious diseases know no borders
- DoD efforts in biosurveillance, diagnostics and medical countermeasures development, and cooperative biological threat reduction contribute to protecting health of U.S. forces and mitigating infectious disease threats to the homeland
    - These efforts also enhance the abilities of our international partners to prevent, detect, and respond to infectious disease threats
- DoD collaborations with partner nations contribute to global transparency of disease risk, which improves pandemic preparedness and the ability to provide for force health protection and national defense
- GHSA can be leveraged as an engagement framework for activities with partner nations that might otherwise be reluctant to engage with DoD in the health space and thereby facilitates DoD mission execution.

National Security Challenge: Early Disease Detection/Diagnosis

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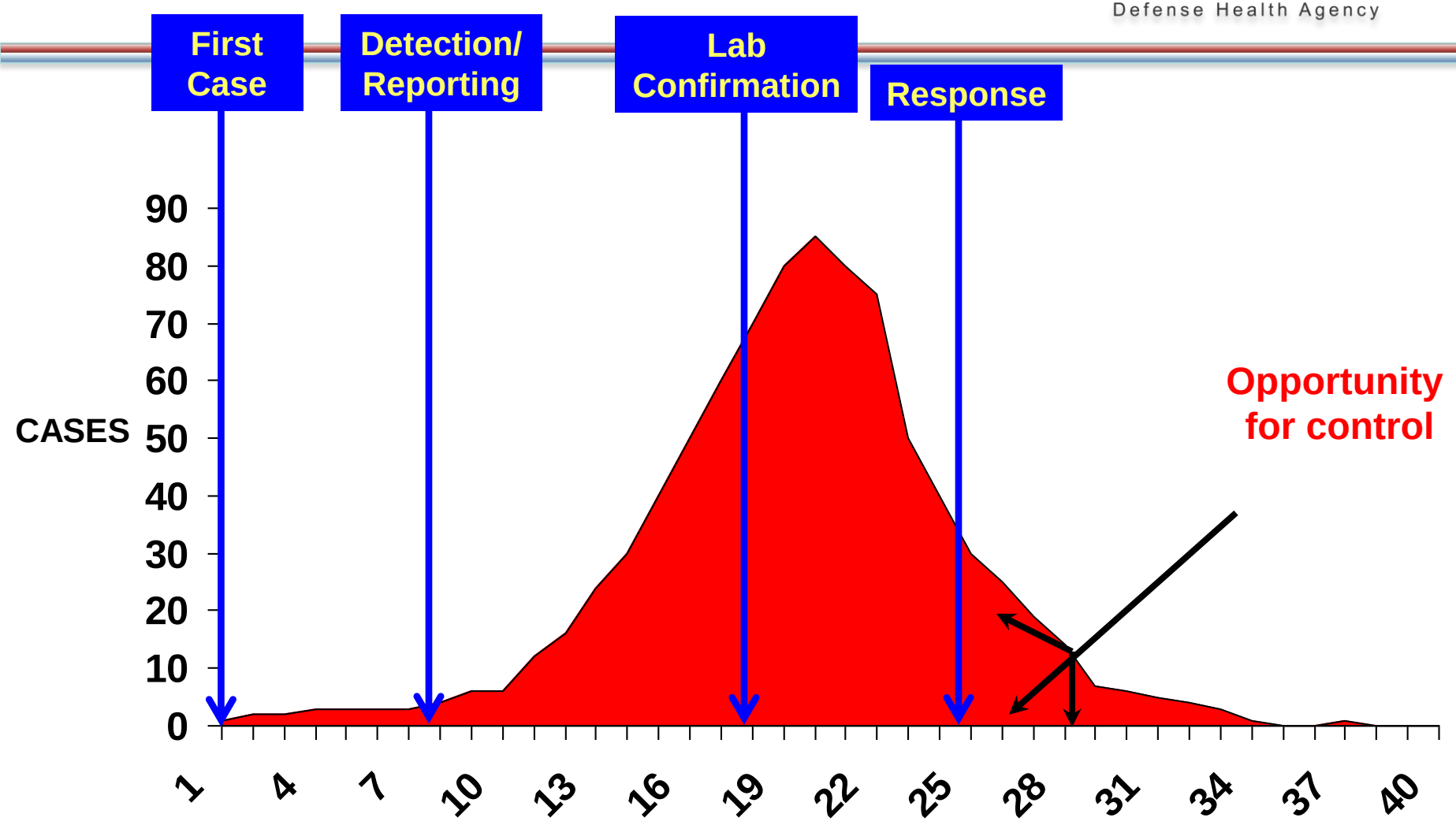

Source: P. Nsubuga IANPHI presentation and developed from Pinner et al., *J Infect Dis*eases1992

Source: Dr. Helen Perry, U.S. CDC

Solving the Problem: Surveillance

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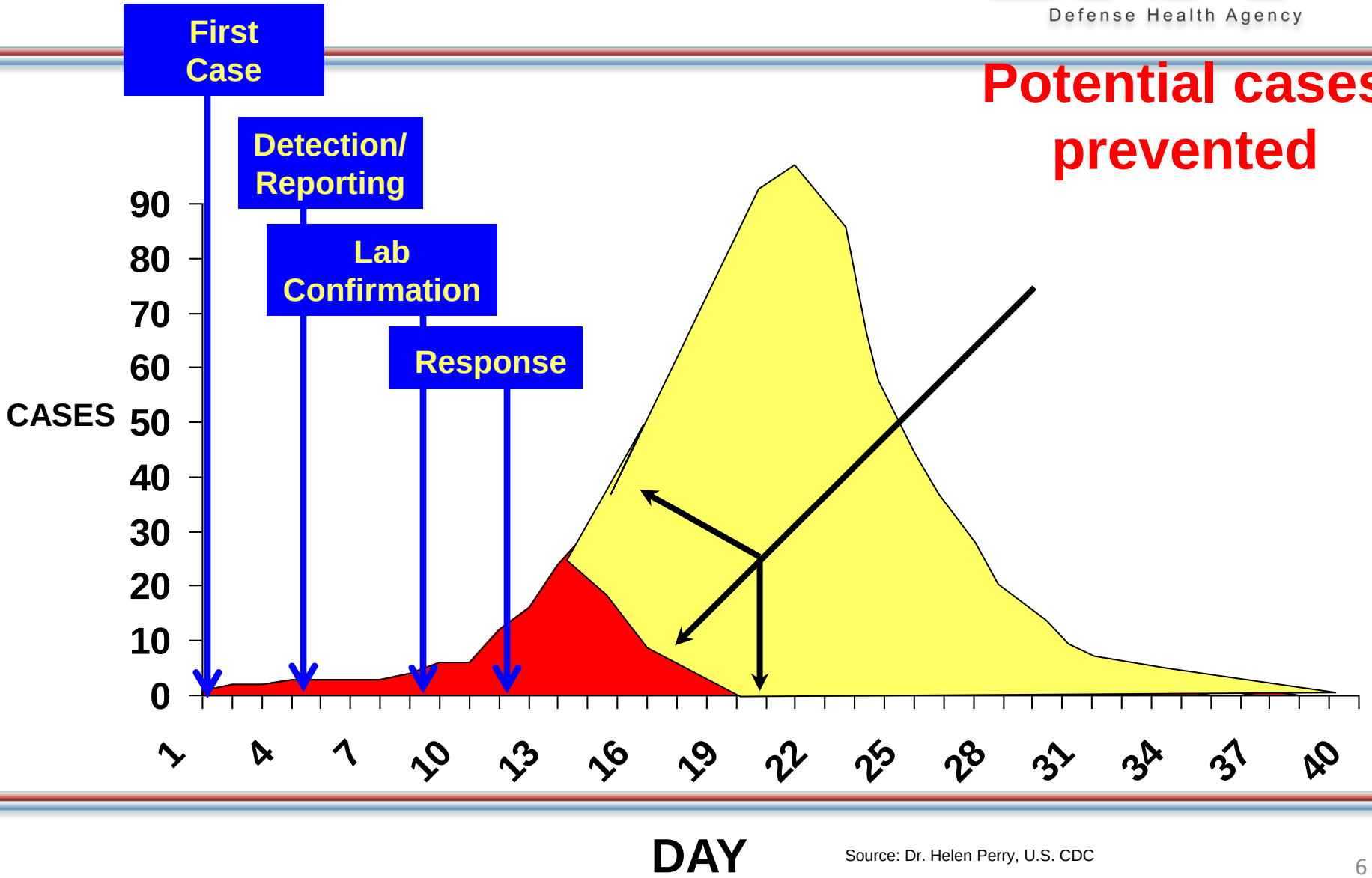
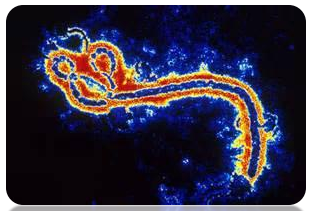


Source: Dr. Helen Perry, U.S. CDC

Surveillance

- Provides early detection of the threat
- Provides essential information for understanding the potential severity and spread of disease (who, what, where, when, why)
- Informs policy and decision makers
- Informs response actions (prevention, control, treatment)



How GEIS got Started

- **NSTC-7, Emerging Infectious Disease (EID) (1997)**
  - Improve infectious disease surveillance, prevention, and response
- **Tasks DoD to:**
  - Strengthen efforts through:
    - Centralized Coordination
    - Improved Preventive Medicine, Health and Epidemiology
    - Enhanced involvement with military treatment facilities and OCONUS Labs
  - Ensure Availability of:
    - Diagnostic capabilities of US military overseas research laboratories
    - Labs are focal point for partnership and training

GEIS Vision and Mission

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VISION

Enhanced force health protection and national security through support to the Geographic Combatant Commands and a global network poised to prevent, detect, and respond to infectious disease threats

MISSION

Inform force health protection decision making and enhance global health security by preventing, detecting, and responding to infectious disease threats through supporting Geographic Combatant Command priorities and strengthening surveillance, outbreak response, collaboration, and coordination of the global DoD laboratory network

GEIS Surveillance Priorities

- Antimicrobial Resistant Infections (& Sexually-Transmitted Infections)
  - Hospital acquired infections and the Multidrug-resistant Organism Repository and Surveillance Network (MRSN)
  - Carbapenem-resistant *Enterobacteriaceae;* Antibiotic-resistant *Clostridium difficile*
  - Cephalosporin-resistant *Neisseria gonorrhoeae*
- Enteric Infections
  - Norovirus surveillance within U.S. military forces
  - Global traveler's diarrhea in naive populations, including expatriates
  - Etiology of acute gastroenteritis in host nation military/civilian populations
- Febrile and Vector-Borne Infections
  - Malaria drug resistance testing & surveillance
  - Arbovirus, and associated vector, surveillance (e.g., Dengue, Chikungunya, Zika)
- Respiratory Infections
  - Influenza virus surveillance for vaccine development, including emerging strains such as H3N2v, H7N9
  - Zoonotic and novel pathogen detection (e.g., MERS-CoV)

FY16
Global Infectious Disease Surveillance

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Number of Countries: 57 | **Number of Projects: 162**

"Medically Ready Force…Ready Medical Force"

Leveraging Big Data to Predict Infectious Disease Outbreaks

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- The risk of the emergence of a novel infectious agent and/or a pandemic is increasing.
- Recent examples include Zika, Ebola, influenza H7N9 and Middle East respiratory syndrome coronavirus.
- Scientific and technological advancements are generating more data than ever before including from:
  - remote sensors;
  - social media sites;
  - flight databases;
  - medical records; and
  - laboratory networks.

- Given the trends in Big Data, how can big data can be harnessed to develop a predictive capability that can improve public health and national security decision making?

Predicting Infectious Disease Outbreaks

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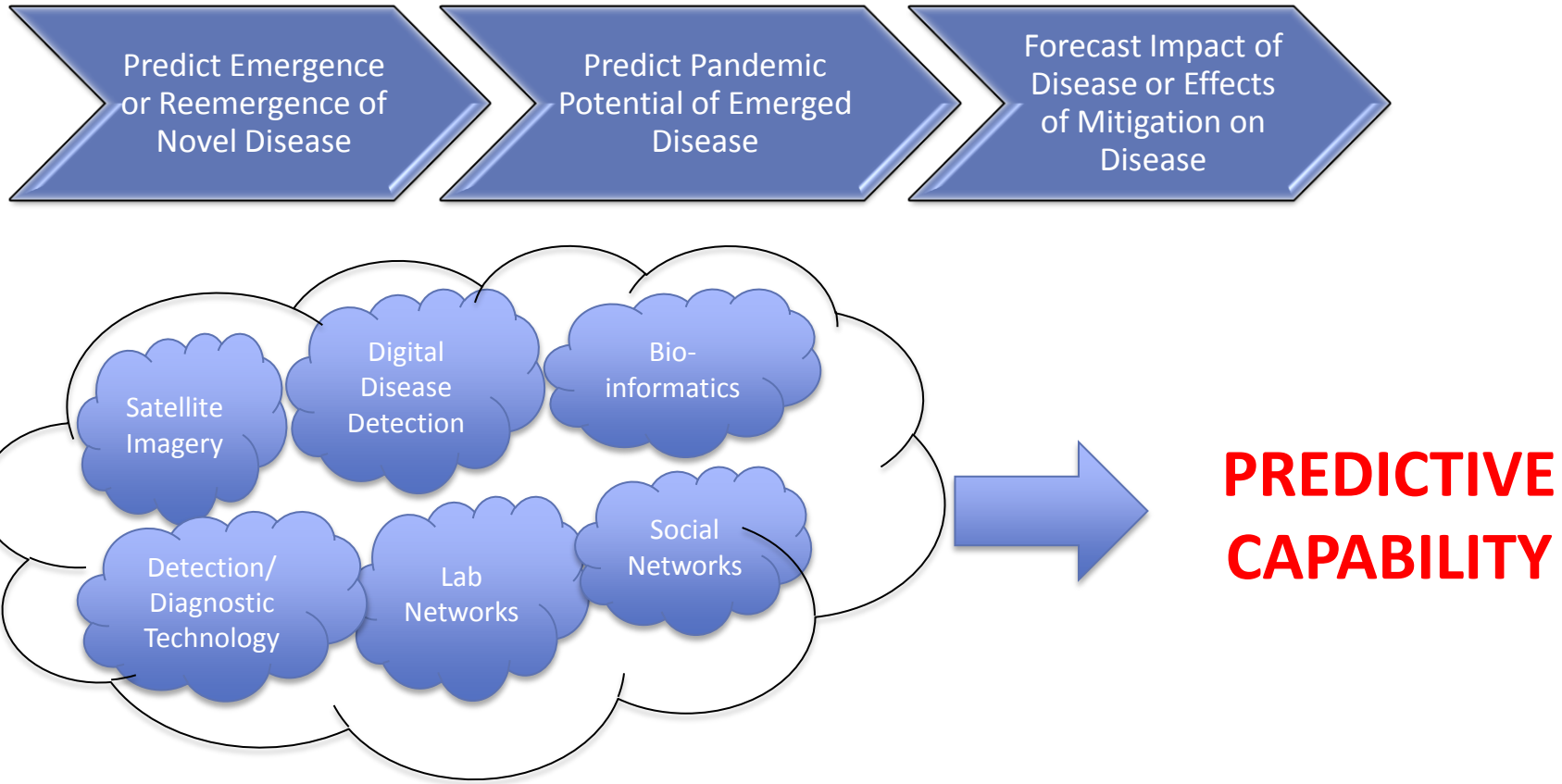

QUESTIONS

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