

# Real time surveillance

GHSA Action Package Coordination Meeting  
Jakarta, Indonesia  
23-25 August, 2016

Benjamin A. Dahl, PhD, MPH  
US Centers for Disease Control and Prevention  
(CDC)

# Global Health Security

**Prevent avoidable  
catastrophes**





**Detect threats early**



**Respond rapidly  
and effectively**



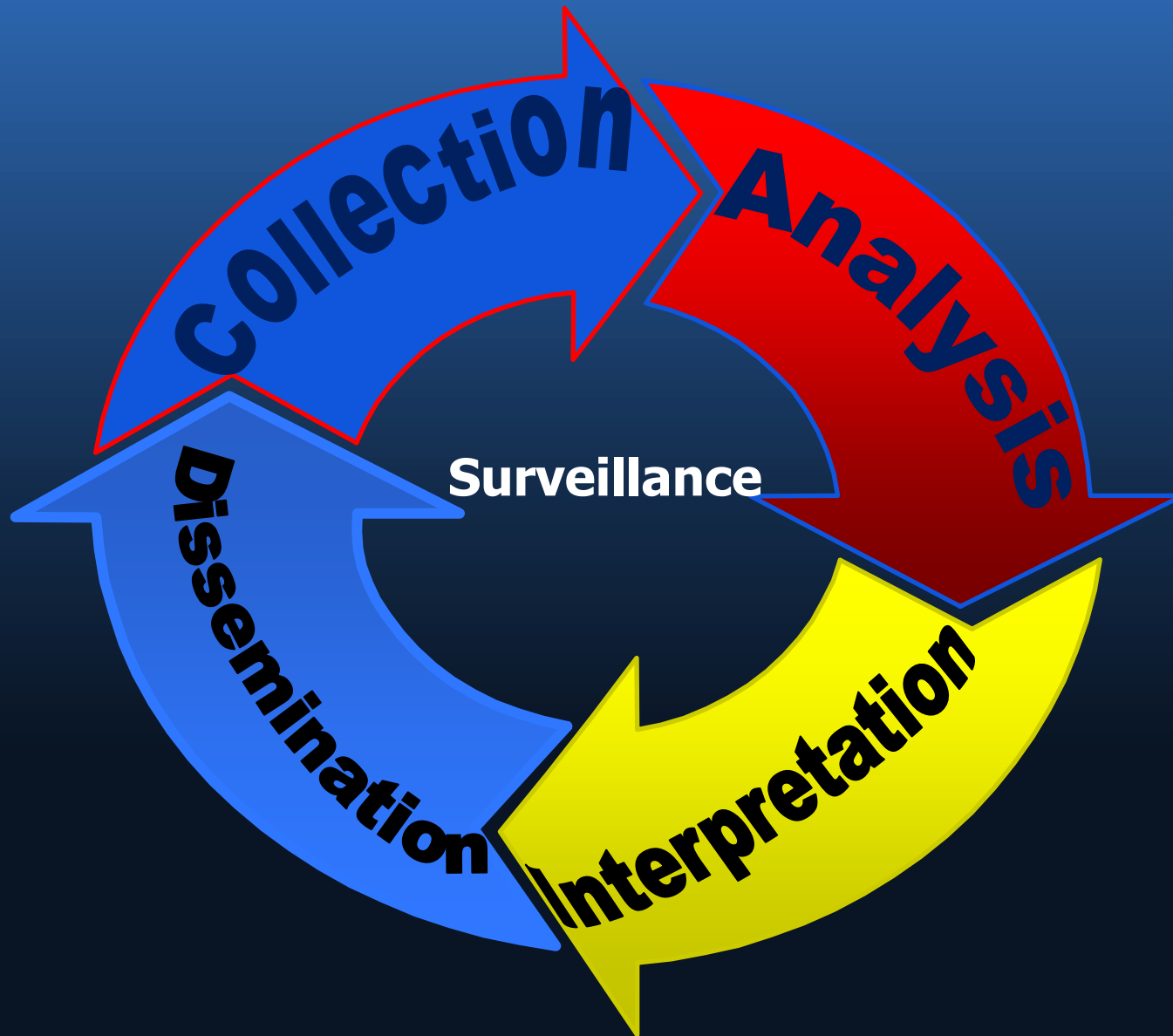
# Global Health Security Agenda: Objectives

Goals	Objectives
<p><b>Prevent</b> avoidable catastrophes</p> 	<ul style="list-style-type: none"><li>❑ Prevent the emergence and spread of antimicrobial drug resistant organisms</li><li>❑ Promote national biosafety and biosecurity systems</li><li>❑ Prevent spillover of zoonotic diseases into human populations</li><li>❑ Ensure that 90% or more of 1 year old population has received measles-containing vaccine</li></ul>
<p><b>Detect</b> threats early</p> 	<ul style="list-style-type: none"><li>❑ Launch, strengthen and link global networks for real-time biosurveillance</li><li>❑ Strengthen the global norm of rapid, transparent reporting and sample sharing in the event of health emergencies of international concern</li><li>❑ Develop and deploy novel diagnostics and strengthen laboratory systems</li><li>❑ Train and deploy an effective biosurveillance workforce</li></ul>
<p><b>Respond</b> rapidly and effectively</p>	<ul style="list-style-type: none"><li>❑ Develop an interconnected global network of Emergency Operations Centers and multi-sectoral response to biological incidents</li><li>❑ In the event of a suspected or confirmed biological attack, have the capacity to link public health and law enforcement for the purpose of attribution.</li><li>❑ Improve global access to medical and non-medical countermeasures during health emergencies</li></ul>

# What is surveillance?

- “If you don’t know where you are going, any road will get you there” ...Lewis Carroll
- “the ongoing systematic collection, analysis & interpretation of outcome data for use in planning, implementation, & evaluation of public health practice”

# Surveillance: The virtuous circle



# Common elements of a surveillance system

Selected activities or components in a surveillance system



Case definition  
Case detection  
Case notification  
Notification system  
Case investigation  
Data management  
Outbreak response  
Lab  
Analysis  
Final classification  
Feedback

Management  
Coordination

# Types of surveillance

- Structure of surveillance system determined by the objective
- Population-based
  - Entire population is monitored
  - Includes all sites where an individual may seek care, i.e., hospitals, clinics, etc
  - Indicated when
    - need to detect every case of a disease for immediate notification, e.g., Ebola
    - disease has an eradication or elimination goal, e.g., polio & measles.
- Sentinel surveillance
  - Selected population samples chosen to represent the relevant experience of particular groups
  - Can be conducted in any health care setting
  - Will not detect all disease cases & cannot provide population incidence, the information can represent disease trends
- Special studies

## Indicator-based surveillance

## Event-based surveillance

### "Surveillance" systems

#### Identified risks

Mandatory notification  
Laboratory surveillance

#### Emerging risks

Syndromic surveillance  
Mortality monitoring  
Healthcare activity monitoring  
Prescription monitoring

#### Non healthcare based

Veterinary surveillance  
Behavioral surveillance  
Environmental surveillance  
Poison centers  
Food safety/water supply

Data

Collect  
Analyse  
Interpret

Report

Capture  
Filter  
Verify

### Event monitoring

#### Domestic

Media  
NGOs  
Field Epi points

#### International

Distribution lists  
*ProMed (English, Chinese, Spanish, Russian, etc.)*

#### International agencies

WHO  
OIE  
CDC  
NASA (e.g., remote sensing, weather, population migration, bird migration, population density, plant, animal)

#### Confidential/Limited mailing list dissemination

*ProMed (e.g., MEDS)*  
International health regulation agencies (WHO, OIE, CDC, NASA)  
*Threat bulletin (EWARN, ECDC)*

#### Public dissemination

News, blogs, articles,  
Health ministry press releases sites  
Weekly releases (Eurosurveillance)

Signal

Assess

Public health  
Alert

Disseminate

Investigate

Control measures



# Hybrid Disease Surveillance

## Surveillance Systems

### Indicator Based

Identified risks  
Mandatory notification  
Laboratory surveillance

Emerging risks  
Syndromic surveillance  
Mortality monitoring  
Healthcare activity monitoring  
Prescription monitoring

Non healthcare based  
Veterinary surveillance  
Behavioral surveillance  
Environmental surveillance  
Poison centers  
Food safety/water supply  
...

## Event Monitoring

### Event Based

Domestic, NGOs  
Field Reports  
Open Media Surveillance  
*Veratid (Argus), GPHIN, etc*

### Int'l Distribution lists

*roMed (Regular, MBDS, Spanish, Russian, etc.)*

### International agencies

*HO, OIE, CDC*

*ASA (e.g., remote sensing, weather, population migration, bird migration, population density, plant, animal)*


### Confidential/Limited

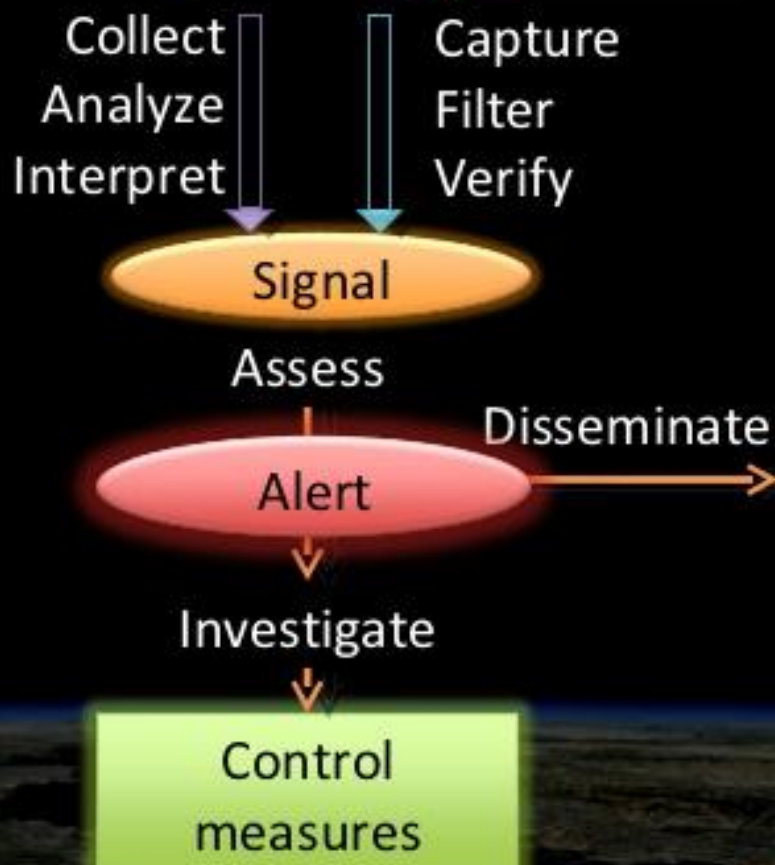
*roMed (e.g., MBDS)*

*International health regulation agencies (WHO, OIE, CDC, NASA)*

*Health bulletin (EWARN, ECDC)*

### Public dissemination

*ews, etc.* 



# Surveillance Next Steps

- Expand broad holistic view of surveillance
- Develop/strengthen the health surveillance system(s) focusing on indicator, event based and syndromic surveillance
- Develop and implement SOPs at all levels
- Accelerate the digitalization of the surveillance system and the electronic transmission of data
- Consider development of a common and shared data platform